THE

MEDICAL REPOSITORY.

VOL. I.—No. III.

CONTENTS.

	Page.
Mineralogical Sketch of New-York	293
On the Cauſe of Yellow Fever in New-York	315
Caſe of difficult Parturition, &c.	333
On a Diſeaſe among Cattle	335
A Caſe of Canine Madneſs	337
REVIEW.	
Ruſh's Medical Inquiries and Obſervations, vol. iv.	343
M'Lean's Two Lectures on Combuſtion	348
Logan on Gypſum	350
Peters on Plaiſter of Paris	351
Brown on Bilious Malignant Fever	353
Church on Camphor	356
De Witt on Oxygene	358
Black on Fractures	360
Facts, Hints, and Inquiries	367
Meteorological Obſervations	373
Table of Hoſpital Patients	376
Return of Diſpenſary Patients	378
MEDICAL NEWS.	
Domeſtic	381
Foreign	386
ADDENDA (on Hydrophobia)	390
APPENDIX.	
DOMESTIC.	
Report of the Baltimore Board of Health	395
Letter of Dr. Ruſh and others to Governor Mifflin	405
Letter of College of Phyſicians of Philadelphia to the ſame	412
Memorial of the ſame to the Legiſlature of Pennſylvania	414
Mitchill, &c. on Effects of Street Manure	416
Hoſack's Caſe of Hydrocele	419
Ricketſon on American Opium	420
FOREIGN.	
On the Culture of Opium,	424
Bonhomme on Rickets	427
Hammick on Nitric Acid	432

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ADVERTISEMENT.

WITH the publication of the third number of the Medical Repository, the Editors deem it proper to inform the subscribers, that the increasing subscription for the work renders it probable that it will, in the course of a short time, obtain a satisfactory establishment. The Editors indulge a hope that this will incline those who already patronize their undertaking, to pardon such irregularities in its distribution, &c. as may be perceived in its present state of immaturity. The embarrassments of this kind are numerous, but are, no doubt, surmountable, and will be gradually removed. The period of their existence will very much depend on the encouragement which the plan shall experience.

As it is the design of the Publishers to annex a list of subscribers to the present volume, they will thank such gentleman as have received subscriptions for the Repository, to return the names of the subscribers, with their proper address, to either of them, or to the printers, by the first of the ensuing May.

New-York, February 1, 1798.

ERRATA.

Page 300, line 21, for *creeks* read cracks.
316, line 16, for *air* read aid.

MEDICAL REPOSITORY.

VOL. I.—No. III.

ARTICLE I.

A SKETCH OF THE MINERALOGICAL HISTORY OF THE STATE OF NEW-YORK.

By SAMUEL L. MITCHILL.

The Commissioner appointed to make a Tour through the State of New-York, in the Vicinity of Hudson's River, respectfully submits to the Society for promoting Agriculture, Arts, and Manufactures, the following Report:—

IN undertaking the task assigned to the Commissioner, the difficulty of collecting and arranging facts, to form a report so extensive as seemed to be expected by the Society, appeared, for a time, an unsurmountable obstacle. To make observations enough, within the short duration of five or six weeks, to complete a report of only tolerable extent, and to bring them together with but a moderate share of skill and accuracy, actually impressed his mind for a time with sentiments of discouragement. Having, however, accepted the appointment, he conceived it his duty to undertake something, and the result of his labours he now offers to his agricultural colleagues. As this is the first expedition of the kind which the Society has authorized, it is not pretended to exhibit a complete view of every thing worthy to be remarked in those parts of the country which the Commissioner has visited; far less in such counties as he has not examined at all. He judged it better to execute as much as he could, with fidelity and correctness, than, by undertaking too much, to tincture the whole mass of his materials with inaccuracy or error. Beginnings, in works of this kind, are always the most arduous and difficult parts of the business. The Commissioner therefore hopes, the paucity of materials, and the manner of their arrangement, in the present report, may not in-

press the Society unfavourably as to this interesting object, but, on the contrary, encourage them to persevere in these inquiries, and, if possible, to procure something like an annual report of a similar nature.

DISCOVERY, NAME, AND SETTLEMENT.

HENRY the Seventh, king of England, employed Sebastian Cabot, one of his subjects, to discover a north-west passage to China; in attempting which, the navigator, in the year 1497, discovered all the north-east coast of America, from Cape Florida to 67½ degrees north latitude; the whole of which tract of country, the crown of England, as the phrase was, became intitled to, by *right of discovery*. Afterwards, in 1584, Sir Walter Raleigh, an Englishman, sent two vessels with people to effect a settlement, who landed at a place since called Roanoke, in Carolina, and took possession of the country in the name of the English sovereign, Elizabeth, calling it Virginia, in allusion to her being a virgin queen. Then, between the years 1584 and 1606, many voyages were made, by various English subjects, to different parts of this north-east coast of America, who took possession thereof for the crown of England, until, on April 10th, 1606, two companies were incorporated, by letters patent, from James, then king of England, by the names of the South Virginia Company, and the North Virginia Company; the limits of the former being between the lat. 34° and 41°, and of the latter, between 38° and 45°; by virtue of which, the South Virginia Company settled themselves first in the Bay of Chesapeake in 1607; and the North Virginia Company made no lasting settlement until 1620, when Plymouth, in New-England, was settled. In 1608, Henry Hudson, an Englishman, discovered what has been since called Hudson's river, whose mouth is in about 40′ 20″ N. This mouth, and considerable part of the river, lie within the limits of both the said corporations. Hudson, without licence from his sovereign, sold his discovery to the Dutch: under colour of which, the Dutch West-India Company made settlements on Hudson's river. Sir Samuel Argal, Governor of the South Virginia Company, conceiving the Dutch as intruders upon his territory, drove them off in 1618.

In the year 1620, King James I. gave the Dutch leave to build some cottages on Hudson's river, for the conveniency of their vessels, bound to and from Brazil, touching there for water and provisions; under which licence the Dutch settled a colony, then called New-Netherlands; which colony of New-Netherlands appears to have included all New-Jersey and Hudson's river, and the

greater part of what is now New-York and Pennsylvania, lying on both sides of New-Jersey.

Complaint having been made of these proceedings of the Dutch, by Charles I. to the States General, the business was disowned by them, and declared, in a public instrument, to be only a private undertaking of the West-India Company of Amsterdam. By these people, the town, then called *New-Amsterdam* and *Manades*, which is now the city of New-York, was begun on the south-west of an island called *Manhattens*, near the mouth of the river.

After this, the Dutch nation remained in possession of the New Netherlands until 1664, when Charles II. sent an armed force to dispossess them; whereupon, on the 27th of August, in that year, the Dutch, on being summoned, made a surrender thereof to Sir Robert Carr and Colonel Nichol.

On the 12th March, 1663-4, King Charles II. in the sixteenth year of his reign, by letters patent under the great seal of England, gave and granted to his brother, James, Duke of York, his heirs and assigns, all Mattawacks, now called Long, or Nassau-Island, all Hudson's river, and all the lands from the west side of Connecticut river, to the east side of Delaware-Bay, together with all royalties, and the right of government; by virtue whereof, James, Duke of York, became seized of the same. Of this he sold all that part which includes the present state of New-Jersey, by lease and release, dated the 23d and 24th days of June, 1664, to Lord Barclay, and Sir George Carteret, their heirs and assigns, in as full a manner as he had received it. And this possession of the English was confirmed on the 21st of July, 1667, by the third article of the treaty of Breda, between Charles II. and the States General.

Afterwards, on the 30th of July, 1673, New-York and New-Jersey were conquered by the Dutch, during a war which was carried on between their nation and the English, under Charles II. and the English government abolished therein. Peace, however, being made between the contending parties, on the 9—19th of February, 1673-4, at London, New-York and New-Jersey were again, by virtue of the 6th article thereof, re-delivered to Charles II.

Then the letters patent were renewed by him to the Duke of York, for the before-mentioned extent of country, &c. on the 29th of June, 1674. Whereupon the Duke of York, by lease and release, dated 28th and 29th July, 1674, conveyed to Sir George Carteret, his heirs and assigns, all of what is called *East-Jersey*, bounded west by a strait line from Barnagat creek, to a certain creek on Delaware river, next below Rancokus kill; thence up the Delaware to the northernmost branch thereof, which is in lat. 41′ 40″ N. and on the North, by a strait line drawn thence to Hudson's river, in lat. 41; and, on the east, partly by the main sea, and partly by Hudson's river, with all the royalties and appur-

tenances; reserving to himself (the Duke of York) all the other granted tracts, particularly *West-Jersey*, which he held and governed, in spite of the claims of Lord Barclay and his agents, under the grant of 1664, until 1680, when the matter was accommodated between the assigns of Barclay and the Duke. The assigns of Barclay and Carteret came to a division, the former holding West, and the latter East-Jersey, in severalty.

The indefinite manner in which the New-York patents were expressed, rendered it difficult precisely to interpret their meaning. But as all Hudson's river was granted, the patentees, and their assigns, have taken possession of the country on both sides; and the territorial lines between New-York and the adjoining states of New-Jersey, Connecticut, Massachusetts, Vermont, and Pennsylvania, have been matters of special negociation, survey, and settlement, so that, at present, the state may be considered as included within the following lines:—

BOUNDARIES OF THE STATE.

THE state of New-York is included within the following limits: that is to say, within a line, beginning a little to the westward of a certain monument, placed by order of the British government, near the northern end of Lake Champlain, on the parallel of the forty-fifth degree of north latitude, where it joins the province of Lower Quebec, and the state of Vermont, and running thence through the middle of Lake Champlain, and along its deepest channel, westward of the Isle aux Motte, until, near the head of South-Bay, it comes to the mouth of Poultney river; thence along the middle of the said river towards its source, until, at the distance of thirty miles east of Hudson's river, it travels southwardly, until it strikes the north-west corner of the state of Massachusetts; thence along the western boundary of Massachusetts until it reaches the north-western part of the state of Connecticut; thence along the western frontier of the same until it reaches the East-river, or Long-Island Sound, at the south-eastern extremity of the town of Rye; thence along the margin of the Sound until it comes to the mouth of Haerlem river, near Hell-gate, and along that river to its termination in the North river, at Spuyten-devil inlet, and along the North river until it arrives at the forty-first degree of north latitude; and thence along the oblique line, forming the extreme boundary of the state of New-Jersey, until it strikes the river Delaware; and thence along the said river until it meets with the north-eastern corner of the state of Pennsylvania, in the latitude of 43° N. and along the same until it reaches the triangular gore, or tract of country, being on Lake Erie, northward of the Pennsylvania patent, and ceded heretofore by New-York

to the United States, and along the eastern limit of the same until it reaches Lake Erie; and thence along the said lake, and the strait leading the waters from it, to lake Ontario, and along lake Ontario until it comes to the river St. Lawrence; thence down and along the said river until it arrives at the forty-fifth degree of north latitude; and thence along that parallel until it comes to the place of beginning; including also the islands lying along the coast; to wit, the island of Nassau, or Long-Island; the island of Manhattens, or New-York Island; Staten-Island, Great Barn-Island, Little Barn-Island, the Brothers, Ryker's-Island, the City-Island, Hart-Island, Hurtleberry-Island, Gardiner's-Island, Shelter-Island; and a number of other small islands and beaches, some of which have human inhabitants, and others none.

DIVISION OF THE STATE, FOR THE PURPOSES OF AGRICULTURAL DESCRIPTION.

THE sea-coast of New-York is narrow; for though Long-Island presents a front of more than one hundred miles, yet its shallow bays, especially on the south side, admit no other than flat-bottomed vessels to come into them, except at the port of Sagg-Harbour, which lies in the large bay, situated between the two projections of land, terminated on the east by Montauk and Oysterpond points. The distance on the main land, from the Connecticut line to the extreme point of Morrissana, is about eighteen miles to the most distant; of the island of New-York, not more than thirty; and across the bay, to the south-western part of Staten-Island, not much more than fifty.

The narrow limits of this state on the Atlantic, and its great extent toward the lakes, makes the description of it difficult, without including some part of the adjacent states. Transgressions will be made, however, not oftener than a regard to perspicuity renders necessary. The state, for the purposes of agricultural survey, may be divided into, I. CONTINENT. And this may be subdivided into, 1. The *granite country*, extending from the Sound to the termination of the Highlands, or first range of mountains. 2. The *slate country*, beginning where the granite ends, and underlaying all other strata, further westward, and northward, than the researches of the Commissioner have extended. 3. The *Lime-stone country*, spreading in some places to considerable extent, and, though scattered in various parts of the country, in large bodies, yet always superficial, and bottomed upon shistic or granitical rock. 4. The *Sand-stone country*, composing the Kaats-kill, or Blue Mountains, and some smaller strata, but always resting upon some deep-laid

and more ancient fossil bodies. 6. The *Alluvial country*, consisting of horizontal layers of clay, loam, sand, turf, and, generally speaking, all such matters as constitute intervale space between mountains and flat-land, along creeks and rivers. II. ISLANDS. And these may be classed as they are, 1. *Primæval*, as New-York, Staten-Island, and the north-side of Long-Island; or, 2. *Secondary*, like the beaches, hassocks, and marshes on the sea-coast, and all that part of Long-Island lying south of the spine, or ridge of hills which runs through it from east to west. As we have had no maps of Subterranean Geography, like those published in Germany, of the Hartz Forest, and in France, of the country around Paris, it cannot be expected the following descriptions of the earthy bodies, supposed to constitute the solid fabric of the interior part of the globe hereabout, will be perfectly correct and ample. Yet, however defective it may be, the Commissioner feels a confidence of its accuracy as far as it goes. Future inquiry must develope the rest.

DESCRIPTION OF THE CONTINENT.

1. *The Granitical Tract.*

THE whole extent of country, from the boundary of Connecticut, along the shore of the Sound, to the entrance of Haerlem river, is, with little exception, a rough and rocky coast. The streams of water that fall into the East river, are small and not very numerous; and the bays, by which the land is divided, are narrow, and extend but a small distance into the country. Granitical rocks and stones constitute the chief mineral productions hereabout; they extend to the North river, and are found on the west side of it, in the counties of Bergen and Morris, in the state of New-Jersey, where they form a large proportion of the first ridge of mountains. The great chain of these granitical mountains runs from north-east to south-west, or nearly so, and may be considered as arising in that spine or ridge, which extends from the neighbourhood of King's-Bridge, and running north, a little easterly, through the counties of Westchester and Duchess, on the borders of Connecticut, divides the running streams, and sends those which arise on its east side into Long-Island Sound, and those that issue from it on the west into the Hudson. The Taconic mountain, on the western part of Massachusetts, is a part of the same chain; and it is presumeable there would be no great fallacy in the account, if they were considered as terminating in the Green Mountains of Vermont, forming there a connection of hills and mountains, extending from north to south, almost from Canada to the city of New-York. This division of the country

includes the whole of the counties of Westchester and Orange, the southern part of Ulster, and the southern and eastern parts of Duchess, and the eastern parts of Columbia, Renssellaer and Washington counties.

The best views of the strata of the granite rocks are along the north side of the Sound, in Westchester county, and on both sides of the Hudson, in the counties of Orange and Westchester, and Duchess, as it passes through the Highlands.

The tide-waters in the Sound, oftentimes thrown into violent commotion by storms, have, in many places, washed away every moveable thing within their reach, and made bare large surfaces of rocks along the shore of the continent. In many places, the solidity of the materials opposes any further incroachments of the waves; but, in others, the proprietors of estates, terminating in promontories, points, and head-lands, of sandy or loomy earth, without rock, are suffering annual waste, by the undermining and tumbling down of their banks. In these places, the bare strata of rocks exposed to view, allow their disposition and structure to be accurately observed; and the perpendicular cliffs, in various places, permit their strata and composition to be ascertained. The rocks which form the basis of the soil, and constitute the chief materials of the mountains, are stratified; and these strata, like the mountains they compose, have a direction from north-east to south-west. These strata are of the vertical kind, and have, in no instance, any great declination toward the horizon.

They consist chiefly of quartz, feldspath, glimmer, schoerl and garnet, blended together in a great variety of forms. The quartz is of three colours; white, (Q. texturâ spatosâ & Q. purum Cron.) half-clear (Q. semidiaphanum) and reddish. The feldspath is both white, (spatum scintillans album) and red, (S. rubrum.)—The glimmer is sometimes colourless, (Mica pura) and sometimes coloured, of a brown or darkish hue, (M. colorata martialis.) The schoerl is both rough (Schoerlus figurâ indeterminatâ) and chrystallized, (S. chrystallizatus) and its colours are black and greenish. The garnets are of different forms, but commonly either bespatter the rocks in minute crystals, of a reddish cast, and friable texture, of a size nearly equalling very small shot, (granatus martialis) or of a larger size, and more determinate figure; they fill up the vacuities, and may be picked out of the interstitial spaces. (G. chrystallizatus.)

All these fossils may be picked up in their separate forms, and they are to be found too variously compacted and combined with each other. Now, one finds quartz in large lumps, adhering to considerable masses of glimmer; then connected with white and red feldspath, and then again with schoerl. Sometimes the schoerl predominates, and gives a black colour to the rocks. Sometimes

the quartz prevails, and their colour is grey or whitish. Again, the mica preponderates, and they thence acquire a shining or glistening appearance. There are instances too, where the red feldspath is the more abundant material, forming huge masses of red granite: according to the prevalence of one or other of these ingredients, is the rock of a whitish, grey, reddish, black, or shining appearance. And as these are varied in the veins, of which the strata are composed, so the stripes, or streaks, which run longitudinally through the rock, are diversified; and as the particles combined happen to be of greater or smaller size, and to be more or less intimately commixed, the rocks which they constitute will be proportionally streaked or speckled.

These strata are sometimes interrupted. The force and attrition of rivers from the upland, and of tides from the ocean, have, by degrees, worn down or torn away, not merely the soil, gravel, and stones, but large parcels of rocky matter. The fragments of these lie thick along the shores, coves, and vallies, where they often appear in solitary nodules, or piled upon each other to a considerable amount; or in sunken masses, whose summits, though visible at extreme ebb, are covered up at high water.

The strata are also interrupted by creeks and fissures. Some of these are longitudinal, or in the direction of the streaks and veins. Others again are transverse, and cross the strata at a right or some other angle. In many instances they wind curiously along through the solid rock in a sinuous or serpentine course. Their width is from a quarter of an inch or less to three feet; and, in some rocks there are spots where the fissure opens all of a sudden, for a short distance, to the width of a rod. These cracks are mostly injected full of other matter, though some of them are empty. The contents are, generally, a mixture of quartz, feldspath, and glimmer, sometimes separate, sometimes united two and two, somestimes all three agglutinated in large and coarse masses, and then again conglomerated more intimately with each other. And such is generally the disposition and structure of the rocks along the shores, and wherever, along the roads, creeks, or on the mountain tops, fair examination can be made.

The appearances on both sides of the Hudson, in the Highlands, are, in the main, very similar to those in the lower country. The rocks at Stony-Point, Anthony's Nose, Fort Montgomery, West-Point, and Constitution-Island, almost exactly resemble those already described. It must be remarked, however, that the channel, worn or torn by the river through these ridges of granite, exhibits much rude and picturesque scenery; and that the rolling off of rocks, and the crumbling down of hills, by the operation of natural or spontaneous causes, has spread through this region more than usual irregularity and disorder.

Within this district there is a range of rocks of another kind, which require particular mention. About fourteen or fifteen miles north of the city of New-York, the west bank of the Hudson, on the Jersey shore, becomes higher and more steep, till, at length, it fronts the stream with an almost perpendicular face of rock. From their commencement, to the southward of Closter-landing, to their discontinuance at Dobb's-ferry, and from their beginning again, north of Tappan, quite to Haverstraw, where they recede to the north-west, and leave the river, they are disposed in vertical strata. Perpendicular rents and splits divide them into oblong masses, or fragments, from top to bottom. Their height is such, that, from the top of them, west of Philipsburgh, an observer may see quite across Westchester county, view the Sound with tolerable distinctness, and terminate the prospect by the hills of Long-Island. Their appearance suggests to the experienced eye, the similitude of Basaltic columns. The Commissioner ascended them in several places, and satisfied himself the rocks were of that composition, *(whin, trap, saxum danemorense)* which constitutes a great portion of the figured Basaltes. Though no regular pillars fell under his observation, either in climbing aloft, or walking below, or examining them with a good spying-glass, as he sailed slowly by them, yet one of his intelligent friends assured him, in a conversation afterwards, that he had seen several of them with regular sides and angles.

A little westward of Fredidiker-hook, one of the highest of the Basaltic ridges, is a lake of about two miles in circumference. To those who are convinced of the volcanic origin of basaltes, this cavity, now filled with water, and inhabited by fishes, may seem the extinguished crater of the burning mountain.

These rocks have many tokens of having undergone fusion, by subterranean fire. In a number of places there is a spunginess and porosity in the stones resembling slag, and approaching somewhat to pumice. Both their vertical arrangement and their insolubility in water, oppose the idea of their being placed as they now are by the agency of that fluid. Besides, there is a circumstance relating to them, which strikingly exhibits the probability of their being some of the most recent mineralogical products of our country. This collection of *vertical* rocks is underlaid, from one end to the other, by *horizontal strata* of indurated clay, mixed with iron, or of clay and silex, with a ferruginous tinge; and by sand-stone, coloured reddish by a martial impregnation. This sand-stone, of which there are valuable quarries near Fredidiker-hook, is composed of silicious grit, clay, and glimmer, with now and then a thin layer of whitish or bluish clay, or clay and mica interspersed; and sometimes bits of semi-transparent quartz are found in it. On walking along the shore, between the mountain and the river, south

of Haverstraw lower landing, these horizontal strata may be observed; and large masses of the sand-stone obtained from them, intended for the builder's use, were seen by the Commissioner lying at the landing. Judging according to the analogy of other cases, and the most probable conclusion that reason can deduce from these appearances, the sand-stone may be estimated as a production, greatly more recent than the granite on which it rests; and the whin and basaltes, long since the deposition of the sand-stone from water, may be imagined to have been thrown from their subterranean abode in a melted state, and to have cooled and hardened in their present situation.

The chief œconomical use of these granitical and basaltic rocks is, for laying the foundations of houses, and for the construction of docks. Great quantities of stones for these purposes are obtained from the quarries, both on the East and North rivers, for the New-York market. On farms, they answer a very valuable purpose, in forming stone-fences for inclosing fields.

As to metallic substances, excepting the copper-mine a little above Newark, on Passaick river, the chief ores of consequence are those of iron. It has been mentioned already how many of the fossils are tinctured with this metal. By admixture with clay, it forms yellow, brown, and reddish ochres, occurring sometimes in large veins or strata. When combined with clay, in another proportion, it forms a solid cement, and conglutinates quartzy pebbles into solid masses. When united with clay and sulphur, in yet other circumstances, it forms yellow or martial pyrites, some of which is durable enough to preserve its compactness for a great length of time; while so loose is the coherence of the ingredients in other specimens, that the oxygene of the atmosphere is attracted by the sulphur, turning it to sulphuric acid, and dissolving the iron. The crystals of pyrites then lose their shining and cubic appearance, the mass crumbles down, and instead of a handsome metallic specimen, nothing is left but an efflorescence of copperas (sulphite of iron) and alum, (S. of alumine) mixed with clay. When iron concretes with thin layers of clay on the surface of the land, it causes that shelly or flakey appearance, so frequently met with in some parts of the country. Sometimes it is found in loose masses, which are chiefly red, brown, or black oxyds, and then, again, they are concretions of pyrites with quartzy gravel. In some places vast collections of bog ore occur in low grounds or swampy spots; and, in others, great quantities of upland ore are procured from the tops and sides of mountains. From among the granite rocks in the Highlands in particular, the inhabitants bring many tons down to the landings on the Hudson: thence it is carried away by water, and forged not only in the works higher up the river, but in those which are established in the eastern states.

This iron ore, some of which is magnetical, continues among the mountains on the west side of the river, for a long distance into New-Jersey, and is so abundant, that the works of Stirling, Ringwood, Mount Hope, Hibernia, Rockaway, &c. have been supplied with all their ore from these internal and neighbouring sources.

Before quitting this head, it will be necessary to mention that amianthus, in various forms, is found among the granitical mountains. That which possesses the longest and best fibre is in the north and south chain. Soap-rock *(Steatites,)* is found too in some places, of a quality fine enough for the lathe, *(lapis ollaris.)* The amianthus has been manufactured into paper, and the Commissioner's ink-stand has been turned out of a bit of the Steatites. Large rocks of stellated asbestos sometimes occur.

2. *The Shistic Tract.*

It had a long time appeared to the Commissioner an object of considerable importance, to examine the spots on the Hudson, where the great ridges of granite break off, on the termination of the first chain of mountains. The facts to be ascertained by such an examination would, as he believed, be of considerable importance, in settling some dubious points of geology, and have a considerable share in making out a rational theory of the earth. He, therefore, landed on the west side of the river, at New-Cornwall, a little to the northward of the Wind-gap, and walked back along the shore below the bank, quite to the foot of Butter-hill. Here, where the rocks had been washed bare by the water, he found what he was in search of. The granite terminated suddenly, and in some spots with almost the perpendicularity of a wall. The strata tending from south-west to north-east, naturally determined his view toward the opposite side of the river. In looking in the direction of the strata, Pollepell's-Island lay before him in direct range. He visited and examined this island, which he found little else than a huge mass of granite. Turning his eye again to the north-east, he observed a sort of point, or bluff, on the Fish-kill side, which, on being examined, proved to be the extreme termination of the granite there.

Having thus assured himself of the cessation of the granite at the before-mentioned bluff, at Pollepell's-Island, and at the northern part of the base of Butter-hill, the Commissioner proceeded along the shore for some distance, on both sides of the river, to satisfy himself of the natural appearances. He found there was an interval of forty rods, or thereabout, between the termination of the granite, and the emerging of the true shistus. This space, between the two great masses of materials consists, of common sand forming a

beach, on which lie nodules of argillaceous grit, quartz, white and red feldspath, shistus, concretions of small stones in an argillaceous cement, and iron ore. Just to the northward of this the slate rocks rise and form the margin of the river. It is highly probable, that the shistus takes a deep dip, and underlays the granite, and that the collection of sand and heterogeneous matters between the place where the latter ends, and the former makes its appearance, is formed partly by the alluvium of the river, and partly by the tumbling down of its banks. As soon, however, as the shistic rocks begin, may be seen numerous instances of their fissures being injected with quartz. The friable slate is broken in many directions, sometimes split lengthwise, sometimes cracked across, now rent obliquely, and then divided by crooked winding and ragged flaws. These openings in the shistic rocks are most curiously and exactly filled, even to the most intricate and minute ramification, with the silicious charge. In his walk, from the commencement of the shistic rocks to the landing at Newburgh, there were frequent verifications of the same thing before the Commissioner's eyes.

The obvious inference from these facts is, that in computing the age or duration of the different fossil bodies, composing the solid matter of the globe, a priority must be allowed to shistic rocks, notwithstanding the very great antiquity generally ascribed to the granitical tribe. It would seem, that, before the granite was formed, or while it was yet soft and fluid, the slate had become hard, and, from the operation of various causes, had been split and cracked in many directions; and that, while the shistic rocks were yet open and gaping, the quartzy substances found their way into the apertures, and filled them with a jet of silicious matter. And this conclusion in favour of the older date of the shistic rocks, receives additional force from the consideration, that most probably the granite is but a superficial stratum, grounded on a shistic bottom.

These slate-rocks are of considerable variety. They are, in some places, exceedingly compact, forming huge masses, or solid blocks. Then, though possessed of considerable hardness, they have a sort of scabrous or ragged appearance: in other spots they are of an exceedingly friable and shattered texture, crumbling easily to small pieces. In certain other situations they may be broken up in pieces large enough for building walls and furnaces. Some of those which are exposed to high degrees of fire, melt or soften enough to derange the works, and give evidence of a bituminous quality. There appeared some instances of shistus that might do for covering houses, and for slates to write upon, but the quantities seemed small, and the specimens not very promising. It is much to be hoped, when the country is explored to a greater depth that quarries of slate, fit for roofs of houses, may be found.

These shistic rocks prevail through a large tract of country. They appear to underlay all the lime-stone and calcarious earth. In many places they constitute a large proportion of the banks of the Hudson. At certain places they emerge from beneath the soil; and, in others, the waters of creeks and brooks has laid bare some of the strata. Shistic rocks form the basis of the beautiful cascade on Cornelius's-kill, about seven miles east of Claverack. They are visible in the creek, which runs through Watervleit, a little north of Albany. The Mohawk river, at the Cohos, or Great Falls, is precipitated down a ledge of shistic rock, and it continues much farther, and, I believe, in all directions. Even the Blue Mountains, as will be soon shewn, enormous as they are, stand upon a basis of slate.

The inclination of the shistic strata is sometimes vertical, then deviating considerably from the perpendicular, and then again the materials are jumbled together in all directions.

3. *The Lime-Stone Tracts.*

Calcarious earth is found in great quantity; and when it is considered of what importance it is to have plenty of lime-stone, marble, and marle, in a country, the disposition of great bodies of these substances, through various parts of the State, must appear a happy and bountiful provision of nature. The masses, or layers, of calcarious earth are every where superficial, and are bedded both on granite and shistus. There are some traces of it to the southward of Tarry-Town, and there is a great body of it at Verplanck's Point, just at the beginning of the Highlands; and at the foot of the Donderberg, on the west side of the river, there is another parcel of it. On the north side of the Highlands, there is an extensive tract of it on both sides of the Hudson. It runs, like the other great collections of rocks, from north-east to south-west. Traces of it are to be found on the west side of the north and south chain, which divides the waters running into the Sound from those that empty themselves into the North river. The southernmost extent of it, on the east side of the river, is a little to the northward of the Great Wappinger's Creek; and on the west side, about three miles above Newburgh landing. The northernmost termination of it, on the west side, is above Acker's-ferry, near Jew's creek; and on the east, a little to the northward of Barnegat. It seems to extend north-eastwardly quite to the Partition hills, and south-westwardly to a very considerable distance in the counties of Ulster and Orange. There is a quantity of it near the northern source of Croton river. Much of this calcarious earth burns into excellent quick-lime. Some of it is mixed with too large a proportion of flinty matter to be capable of calcining well. Other parcels of it again are susceptible of being smoothed and even polished for ornamental and

elegant purposes. There are some kinds that are of a crumbling and rotten texture, and others which possess very great hardness. There occurs, in several places, a sort of friable calcarious earth, of a white colour, lying in horizontal strata, and easily reducible to a white sand, which the inhabitants use for sprinkling on their house floors.

Calcarious earth is not confined to the very large collections just described, but in smaller quantity, and loose masses, is scattered through the mountains where the iron-ore abounds. That kind of earth which is used in the furnaces, to assist in fluxing and reducing the metal, is thus distributed about the country, where iron works are erected, in quantity sufficient for their use.

But calcarious earth is, in some places, filled with the remains of animals. There is a lump, or mass of lime-stone, in Columbia county, about half a mile west from the village of Claverack, and of about eight hundred acres in extent, which is remarkable for its petrifactions: it is a high ridge, the margin of which is, in some places, shelving, in others perpendicular, and, in others, almost overhanging the road as one passes along. Fifty or sixty rods after ascending the crags on the east side, the rocks are curiously figured all over their surfaces, with likenesses of sea shells; and, on breaking them to pieces, their internal substance is found to be composed principally of the coverings of marine animals. Although these materials are firmly compacted into stone, yet their shapes are often so intire and complete, that the species may be readily distinguished. But it is worthy of particular remark, that of the species there discovered, there are resemblances of the shells of several marine animals that are not known at present to be inhabitants of our coasts or shores.

This spot is distant about one hundred and forty miles from the ocean, and nearly four east from the fresh water of Hudson's river.

It is not intended to offer many reflections on these curious appearances. Certain it is, from the superficial arrangement of much of the calcarious matter upon the globe, and from the remains of animal substances which it apparently contains, much of the lime-stone may be fairly considered as of more recent date than the granitical and shistic fossils. The opinion to which modern philosophy leans, that all the calcarious earth in the world is to be traced back to the collecting labour and accumulation of animals, appears doubtful; for this plain reason, that if lime is a primitive earth, or elementary substance it, must have existed, in some form and some place, before animals could have been furnished with it. A right consideration of the matter will then divide calcarious earth into, 1. That which is coeval with the present mundane system; and, 2. That which has undergone solution

in the ocean, and other water or fluids of any sort, and has been directly precipitated from them, or, after having entered into the structure of animals, exists now among their relicks. The agency of animals in manufacturing the first kind is out of the question: the only inquiry is, how far their labours have been instrumental in giving its present form and qualities to the second. The Commissioner feels a persuasion, that, though real exuviæ of animals do indisputably exist in large quantities, in many parts of the earth, (see *Luidii* Lythophyl. Britann. Ichnograph. passim) yet there are some appearances, of shells particularly, which are of a very doubtful and imposing nature. It has been said, that there is a natural process, whereby, in the consolidation of a rock or stratum, the resemblance of a shell may be produced where no real shell ever existed. Some observers have gone so far as to declare they have witnessed the production and growth of them, from a microscopical smallness to a considerable size; and that, according to the particular arrangement and coherence of the particles, the figures of different species of testaceous creatures were counterfeited. Many of these supposed exuviæ are evidently crystallizations. Bodies, when taking upon themselves a crystallized figure, assume a greater variety of shapes than has hitherto been ascertained, after all the labour bestowed upon the subject. It is known, that, in the *Cotham stones* and *Florentine marbles*, both of which are lime-stones, there are representations of houses, castles, ruins, trees, rivers, &c. naturally formed, and to be brought to view by breaking and polishing: in these instances, nobody supposes the objects presented are genuine petrifactions, but only casual resemblances of certain things, occasioned by the peculiar arrangement of the particles of the stone. Why, then, may it not be allowed, that likenesses of animal substances may occur in the crystallizing process by which many calcarious rocks were formed? and in situations where, in fact, no animal, or part of an animal, ever existed?

Shistus underlays the whole of these strata and masses of lime-stone. The city of Hudson, a small distance to the westward of the spot just described, is partly built upon this kind of stone; and the same sort of slaty material abounds beyond Claverack to the eastward. In like manner, between Poughkeepsie and Wappinger's Kill, the spots can be easily found where, on the cessation of the lime-stone, the shistic rocks make their appearance from below.

4. *The Sand-Stone Tract.*

Besides the quarries of sand-stone in the neighbourhood of Newark, in New-Jersey, and those already mentioned as support-

ing the basaltes, there are yet other large bodies of it in the state of New-York. The most considerable of these lie back of Kingston and Kaat's-Kill, and form the second range of mountains, or the Blue Mountains.

They are partly in Ulster and partly in Albany county. They are commonly known by the name of the *Blue Mountains*, on account of a blueness or haze which they present to the eye when seen from a distance. They are likewise called the *Kaat's-Kill Mountains*, from a river of that name which issues from them and falls into the Hudson a little below Lunenberg. They are considered, and perhaps with truth, the highest land in the State of New-York; and though, by reason of their remoteness, not visible by mariners arriving on the coast, are however to be seen from a great distance inland.

They consist chiefly of sand-stone, *(lapis arenaceus)* which is grounded upon slate of a brittle and shivery texture, *(shistus fragilis)* some of which, when exposed to a high degree of heat, melts and gives evidence of a bituminous quality *(shistus pinguis)*. The layers of this mass of slate are of the vertical kind, or have an inclination of about from sixty to eighty degrees from the horizon; though in some places their order is disturbed, and there appears to be an irregular mixture or jumble of the materials together. In some places, quartz *(quartzum amorphum)* is blended with the slate; and in others, veins and fissures of the shistus are filled up with it *(quartzum granulatum)*.

The mountains are supported upon this *slaty* foundation. The rocks are composed of flinty sand, or grit and pebbles of various sorts, conglutinated, and piled up in vast horizontal strata. The particles of grit are not impalpable, but are easily distinguishable both by the sight and touch, seeming evidently to have been formed by attrition, prior to their being consolidated in their present form. The pebbles, or small stones, contained in the rock, are principally red and white quartz, sand-stone, and red jaspar *(diaspro rosso)*: all of them are of small sizes, roundish, and smooth, with every appearance of being water-worn, as they most exactly resemble the nodules lying on the beaches and shores of the Atlantic. Toward the tops are found petrifactions and impressions of marine shells, some of which exist in an argillaceous, and some in a silicious ground; and it is remarkable of these, as well as of those found in the calcareous stone at Claverack and the flint near Poughkeepsie, that though the clam and scollop shells are very plain, there are evidences of other animals quite as easy to distinguish, which are not found existing in our waters, nor along our coasts. The horizontal disposition of the strata continues from the base quite to the tops of the highest ridges, and a remarkable sameness prevails throughout the whole. The water

is exceedingly pure and good, giving no particular indication of a saline, calcareous, or metallic tincture; though it was said iron-ore was to be met with in certain valleys, and lime-stone in some places entered into the composition of the hills.

His expectation, when he set out upon the expedition, was, that the mountains were of the *primary* kind; but he experienced no small degree of surprise on finding all the facts before him bear witness of the recent formation of these huge masses. Every thing, from the shistic foundation upward, had a modern look; though without pretending to determine precisely when the mountains were erected on their present foundation, the beholder cannot refrain looking back toward that time, when the creatures that inhabited the petrified shells were alive; to that more remote period, when the sand and gravel which formed the shores where they grew, first acquired their smallness and rotundity; and to that still more distant æra, when the waves of the ocean, after having comminuted and smoothed the latter, gave animation and nourishment to the former.

It may be remarked, in general, that the course or direction of the ledges is, with variation of a few degrees, from north-east to south-west, in the secondary, as well as in the primary rocks; the arrangement here being no exception to the general rule prevailing through the continent.

Their most rugged and difficult ascent is on the eastern side, where perpendicular walls of different heights, from five to fifty feet, piled within each other, tier above tier, constitute, in some places, the rocky fabric and solid support of the mountains. Their nakedness is relieved by a coat of mosses and by shrubs, bushes and capillary plants, springing out of their cracks and crevices, wherever they can adhere or insert their roots; as well as by the tall and stately trees which cover the space between the top of one precipice and the bottom of the next. But notwithstanding this various covering, the larger divisions of the rocks can be seen for many miles, rising, as it were, step by step, to the summit. Towards the west, there is no corresponding structure, but the land shelves away gradually toward Schoharie-Kill, whose stream takes its rise in the mountains. The country behind them is consequently much more elevated than the tract between their foot and the Hudson; and by reason of their more easy access from that quarter, a number of the settlers who were discouraged by the eastern aspect, have ventured to come in from the westward.

Within half a mile of the spot where the waters divide, and run both east and west, there grow very large maple-trees *(acer saccharinum)*, whence some of the families manufacture considerable quantities of sugar. A white pine measured five yards and a third in circumference *(pinus strobus)*. A hemlock was more than

four feet across the stump *(pinus Canadensis Linn)*. A wild cherry-board *(prunus Virginiaca)*, at a saw-mill, was thirty inches wide. Spruce trees, of a size for spars and yards of ships, are plentiful in the same neighbourhood *(pinus Canadensis du Roy)*.

His route to the place where this heavy timber grows, was between two ponds, or lakes, surrounded by tall trees, and fringed with a green margin. They contain fishes; but as much of the water had evaporated during a drought which preceded the journey, they looked uninviting, and he did not approach near enough to throw in a line. The water issuing occasionally from these reservoirs, and collected from the rills trickling down the mountain sides, forms several brooks, which, seeking their way through the vallies, travel along pebbly and rocky channels, and, after falling into the Kaat's-Kill, empty themselves into the North River. Two of these, as they cross in their courses perpendicular masses of rocks, produce remarkable cataracts.

The first is on a branch of Kaat's-Kill, which, after a pretty rapid descent along its bed, first pitches more than two fathoms, and then running a few rods further, falls in a most beautiful sheet down a steep, which measured a little distance off one hundred and fifteen feet. At no great distance below, the water again falls more than one hundred feet, and continues descending with such violence and rapidity along its channel, that Mr. Lane estimates the whole descent, within one quarter of a mile, to be four hundred feet. The going down and coming up the rocks which form the sides of the valley are so difficult, that the bones of bears and deer are said to be frequently met with below them, owing probably to the animals, having descended to drink, and, not being able to return, starved to death there. The face of the rocks is worn somewhat circular, and is considerably excavated below. The stream is, of course, precipitated to the bottom without impediment, and very much divided into spray by so long a passage through the air. Between the fallen water and the rock, the space is covered with verdure, and the whole distance from the bottom to the top is beautified with plants, which find room for their roots, between the crumbling layers and among the mouldering parts of the rock. The mosses, maiden-hairs, strawberries, sumachs, and spruces, which have fixed themselves here, give to the scene a very lively and pleasant air; and, owing to the abundant evaporation, there is so little heat prevalent at this place, that snow remains unmelted until near the middle of June, between the descending torrent and the rock from which it is projected. Both sides of the valley through which the water hastens away, are composed of steep and lofty rocks, supporting huge trees, chiefly of the ever-green kind; and along this there is an extensive view of the mountain sides towards the east. Among the fragments, which, by the undermin-

ing of the water below, are, from time to time, breaking off in masses of many tons weight, and rushing to the bottom, and some of which are now hanging almost in equipoize, just ready to drop, the most luxuriant vegetation keeps out of sight the bare and disordered appearance, and, in a good degree, conceals behind its perpetual foliage, these ruinous and wreck-like appearances of nature. It luckily happened when we were there, the quantity of water was small, but from the size of the logs drifted down, and left by the subsiding freshets among the rocks of the channel, there was no difficulty in imagining how great and impetuous the flow must sometimes be, that could float such pieces of timber along, and split them to shivers in their fall. From the edge of the bank, a little way off, where several large trees afford a firm hold, securing the spectator from slipping, a tolerable view can be obtained. There is something in it exceedingly picturesque, which, under the pencil of an artist, would afford a sketch possessing much novelty and peculiarity.

The other cataract, called *Mitchill's-Falls*, is on the Kaat's-Kill itself. Exactly at the precipice, the mountain seems to have been rent asunder, and, receding to the right and left, leaves between its enormous and craggy piles, a deep and dreadful opening. This takes a turn toward the left, and winding along in that direction, the view is soon intercepted. From a point of elevated rock, a little to the left of the falls, the whole bend is full in prospect, extending, like a vast amphitheatre, from its commencement, just on the right hand, to its termination, by the intervening objects at the other extreme. A border of hemlocks and pines adorns the brow of the rocks; a like covering, mixed with laurels, *(kalmia major,)* and white cedars, *(thuja occidentalis,)* adown the steep, imparts to them perennial greenness; and the whole distance thence to the bottom of the chasm is skirted with similar trees and shrubs. Whether you look down or round, the prospect, though not extensive, is sublime and awful. The water first falls one hundred and sixty-two feet perpendicular, into a large bason, or excavation, in the rock below, of about forty yards in diameter; then, issuing from this pool, it suffers a second fall of eighty feet more, making, in the whole, a descent of two hundred and forty-two feet, as Mr. Lane measured it. To look down from the projecting layer of stone which forms the brink, is too dangerous for the most steady head. His guide, who would not suffer such an experiment to be made, caused him to lie prone upon the rock, and then creep forward, until the precipice was fairly before his eyes; and while he was held thus by the feet, he got as perfect an idea as he could of that part of the scenery. As this, when contemplated under such circumstances, was not wholly satisfactory, and as it did not appear practicable without a very fatiguing and circuitous walk to

descend the crags, and look at the cataract below, he reluctantly departed without seeing so much as he wished. Upon the whole, however, it may be safely observed, that though the quantity of water is less, these falls are more worth the seeing, than those of Passaick, the Cohoes, or the upper ones of the Mohawk.

On climbing the highest part, called the Round-Top, he frequently met with the paths of wild animals, in which the fresh tracks of bears and deers were very plain to be seen. As he ascended, the vegetable productions became so different, that he had now entered a new climate, for here the white and black birch *(betula alba and nigra)*, swamp sumach *(rhus vernix)*, balsam-fir *(pinus balsamea)*, bass wood *(tilia Americana)*, with now and then an oak *(quercus nigra)*, were the principal trees; though even hereabout, in some spots, the spruce and hemlock grew plentifully, and among the underwood, besides the great and small moose-bush, grew the common gooseberry and blackberry. He had before observed the wild raspberry *(rubus odoratus)*, and the English, or garden raspberry, about half way up. The Round-Top is a level spot of several acres in extent. It is very thickly wooded, and its chief product, besides a few birches, is the balsam-fir. This is generally small, as are many of the trees thereabout, there seeming to be a gradual diminution of their size as you ascend. Among the balsam trees, the principal plant of note is a wood sorrel, which he took to be the *Oxalis tomentosa*, plentifully and thriftily growing.

From this circumstance of the top being not bald, but thickly covered with trees, it is fairly to be concluded, that not one of the Blue Range belongs to the *Alpine Class of Mountains*, whose character it is to reach what is termed the second region of the atmosphere, or at least so high that no trees can grow erect upon them. Among Alpine Mountains then, of which those of Switzerland, New-Hampshire, Lapland, and Peru, are instances, being such upon whose summits either no tree can grow, or if a tree should, by accident, be rooted there, it could not grow straight up, but, weak and dwarfish, would creep like a shrub upon the ground, the Kaat's-Kill Ridge has manifestly no claim to be enumerated. Besides, the want of Alpine plants is another weighty circumstance in determining their moderate elevation. Plants of this sort are mostly small, for they grow on the naked hills, exposed to all weather and winds; for the same reason, and because they usually grow in a barren soil, they are tough and hardy. Now, there is no evidence of sterility in this mountain top, nor were the saxifraga nivalis & hypnoides, rhodeola rosea, cerastium tomentosum, sibbaldia procumbens, rumex digynus, or any of the Alpine plants he had seen elsewhere in their native places, or that are to be met with in botanical enumerations, to be found

here. Nor does he remember to have noticed a single willow *(salix)*, six or seven species of which are frequent in high stations.

From several places at and about the Round-Top, he and his companions climbed trees to enlarge their view of the surrounding objects; they, at last, adopted the most effectual method of bringing them in sight, by cutting down the trees and opening an avenue. With some labour this was effected on the eastern side, whence a prospect of the country between the mountains and the Hudson was obtained, as well as of the river itself, and the vessels sailing up and down it; and of the tract extending eastward as far as the Taconick Mountain in Massachusetts; while, from Kinderhook and beyond, further than Kingston, and the land stretching away southwardly on the other side of it, the eye comprehended the whole survey. From this place, the country lay as a map before them, and they took a bird's-eye-view of the hills, vales, woods and plantations they had travelled through in their passage here, which, on account of their distance, had now lost much of their distinctness, and, notwithstanding their inequality and roughness, appeared quite like a plain. They were now above the region of clouds, which, condensing below, obscured the view, and, for a time, took every terrestrial object out of sight; but dissolving again, and from time to time breaking away, partial observations could be got of the subjacent objects; and these, as they appeared through the mist and disappeared, afforded, together with the phenomena of water, suddenly precipitated from its solution in air, and quickly dissolved again, a curious and amusing spectacle. There was novelty in hearing thunder below them, and it was, besides, delightful to behold from one spot, so extensive a tract of the most fertile and populous part of the state of New-York, where the eye, instead of expatiating on inhospitable heaths and barren wastes, roves from one farm to another, and passes from improvement to improvement. This prospect will be greatly enlarged when the top shall be cleared of its wood; but even at this time, he recollects but one which he thinks surpassed it. This was in the west high-lands of North-Britain. The Scotch are very proud of their Loch-Lomond, and truly the lake, with its contained islands, and neighbouring mountains, exhibited a mingled scene of beauty and sublimity. From the summit of Ben-Lomond, there is the grandest prospect I ever enjoyed. Fortunately, when I was on it, the weather was so serene, and the atmosphere so free from clouds, that one of my companions, who had ascended the mountain more than a dozen times, said he had never had so fair a day. Southward, the lake, with its twenty islands, the village of Luss, the mansions of Cramstraddon and Bonhill, and beyond Smollet's sumptuous monument, beside the river Leven, the town and castle of Dunbarton, and the

Frith of Clyde, appeared beautifully in view; further than these, Port Glasgow, Greenock, the islands of Bute and Arran, and the Craig of Ailsa, together with a part of Ayrshire and the Atlantic ocean, lay fairly displayed. Westward, besides Loch-Long and Loch-Fyne, several of the Hebrides, and, in particular, the heights of Isla, the paps of Jura, and the mountains of Mull, could be clearly discerned. Northward, the stupendous Highlands, extending in the shires of Perth, Breadalbaine and Argyle, away toward Lochaber and Inverness, as far as the eye could comprehend, afforded a sight of rude grandeur and wild sublimity. Eastward, Lochard, Enrick-water, Loch-low, the city and castle of Stirling, the hills of Fifeshire, the river Forth, and the arm of the German Sea, were plainly seen; and had there not been a portion of haze toward the south, it was judged the castle of Edinburgh, Salisbury Craig, the Calton and Pentland hills, and Arthur's seat, might have been descried.

The Rein-deer-moss *(lichen rangiferinus)* was frequently met with in the Blue Mountains; and the peat-moss *(sphagnum palustre)* thickly covered the rocks in the moist atmosphere of the tops. The arctic liverwort *(lichen arcticus)* was very plentiful on many of the rocks; and, in short, the species of cryptogamous plants were so numerous, that the Botanist who is fond of investigating them, might here find a great deal of employment.

On his return, he crossed the High-Peak, which, next to the place he left, is the loftiest ridge, and found it covered with similar productions. The balsam-firs grow so frequent, that a man cannot, without difficulty, force his way through them. From the east side of this, by cutting away some trees and boughs, a noble prospect of the country was once more procured.

For the information of those who may be disposed to visit these mountains, it may not be improper to mention, that the middle parts are much infested by rattle-snakes *(Crotalus horridus)*, several of which the Commissioner saw, though he believes these serpents far less to be feared than common rumour allows, being convinced, both from his own experience and the information of others, that they seldom bite without provocation. The misfortune of losing some of the quicksilver through the leathern bag of the barometer, prevented the Commissioner's intended observations with that instrument; and the breaking of the stem of his thermometer in travelling through the thickets, deprived him of the satisfaction of ascertaining, by experiment, the boiling point of water, ether and alcohol on the mountain tops. The difficulty of carrying such instruments on an expedition of this kind is excessive; yet, it is hoped, some more fortunate traveller will succeed in making these trials.

(To be continued.)

ARTICLE II.

An INQUIRY *into the Cause of the Prevalence of the* YELLOW FEVER *in* New-York.

By VALENTINE SEAMAN, *M. D.*

THE following inquiry into the history of the epidemic Yellow Fever that has appeared in this city, at different times since the year 1791, was instituted for the purpose of ascertaining its most probable and essential causes. If I have succeeded, my end is answered, and my trouble fully compensated; if not, I still gratify myself with the thoughts of having established, with a considerable degree of accuracy, facts, that may be useful to some more fortunate inquirer.

The great difficulty of coming at the simple truth, even near at home, has made me cautiously avoid attending to hearsay stories of what has happened abroad; obscured by their distance, often warped by their relators, and too generally eagerly caught at by their favourers, and equally neglected by the adverse party. An instance of the impropriety of giving a currency to such fly-about tales, is glaringly exhibited in William Currie's letters to Benjamin Wynkoop: this *penetrating* man having convinced himself, notwithstanding a bulwark of opposing evidence, (Webster's papers on Bilious Fevers, and Bayley's Account of the Epidemic of 1795,) impassable by any body else, that the Yellow Fever that desolated our city in 1795, was introduced into it by the brig Zephyr. One naturally would conclude from Dr. Currie's account, that he had confined his inquiries merely to the superficial scum of newspaper observations, and flying reports; but his subsequent reflections prove him to have been acquainted with what ought to have corrected his premature and ungrounded conclusions. But these circumstances, so discordant to his wishes, it seems he has thought proper not to attend to, but rather to rest his opinions upon the slender support of his *ipse dixit* authority; while he soothes his feelings, by flying from the narrow path of reason and truth, into the unbounded field of hard-strained invective and feeble scurrility.

I cannot, in this place, forbear noticing the different effects that opposite opinions have had on the subsequent fate of Philadelphia and New-York. While the physicians of the former place,* I will

* I do not hereby mean to include all their physicians, but only the majority of them, as several worthy characters among them have risqued their very reputation at the shrine of public welfare, in attempting to call the attention of that afflicted city to its true interests.

not say, "*actuated by some malignant motive*,"* as I can hardly conceive human nature capable of such depravity, have been flattering the pride and vanity of their fellow citizens, with a notion, that their city was all-perfect, and its situation, in regard to healthiness, beyond amendment; and that to keep up a sharp look-out to their neighbours was all that was necessary; they have induced them to disregard that attention to cleanliness, which the terror of their first attack had driven them into; and hence have those who unhappily confided in their judgments, returned to their former neglect of domestic causes, which has again involved them in a calamity, as general, and, perhaps, as fatal, in proportion to the *remaining predisposed inhabitants*,† as that of 1793. In the meantime, the *learned* physicians, as they have, in a sneering way, been called, of New-York, have had honesty and independence enough to speak their minds freely, and to let their fellow citizens know, that "without the aid of putrid effluvia, they need have no apprehension of a Yellow Fever *spreading* among them;" and their silly hearers, from being so weak as to put confidence in their opinions, have removed most of the suggested causes of pestilence; and hence have confined the effects of the disease, this year, to the narrow limits of a few filthy spots; and the number of deaths to within thirty: notwithstanding the severity of attack, and malignancy of the complaint, where it prevailed, were fully equal to that of 1795.

I shall not impose upon the time of the reader, with quotations from different authorities, in various parts of the world, in proof of the particular prevalence of Yellow Fever in places especially favouring the accumulation and fermentation of putrefactive materials of some sort or other; these facts being too well known to need recapitulation: but shall endeavour to trace the history and progress of the disease, for the purpose, if possible, of ascertaining its true cause, as it has occurred to my observation, in this city for several years past.

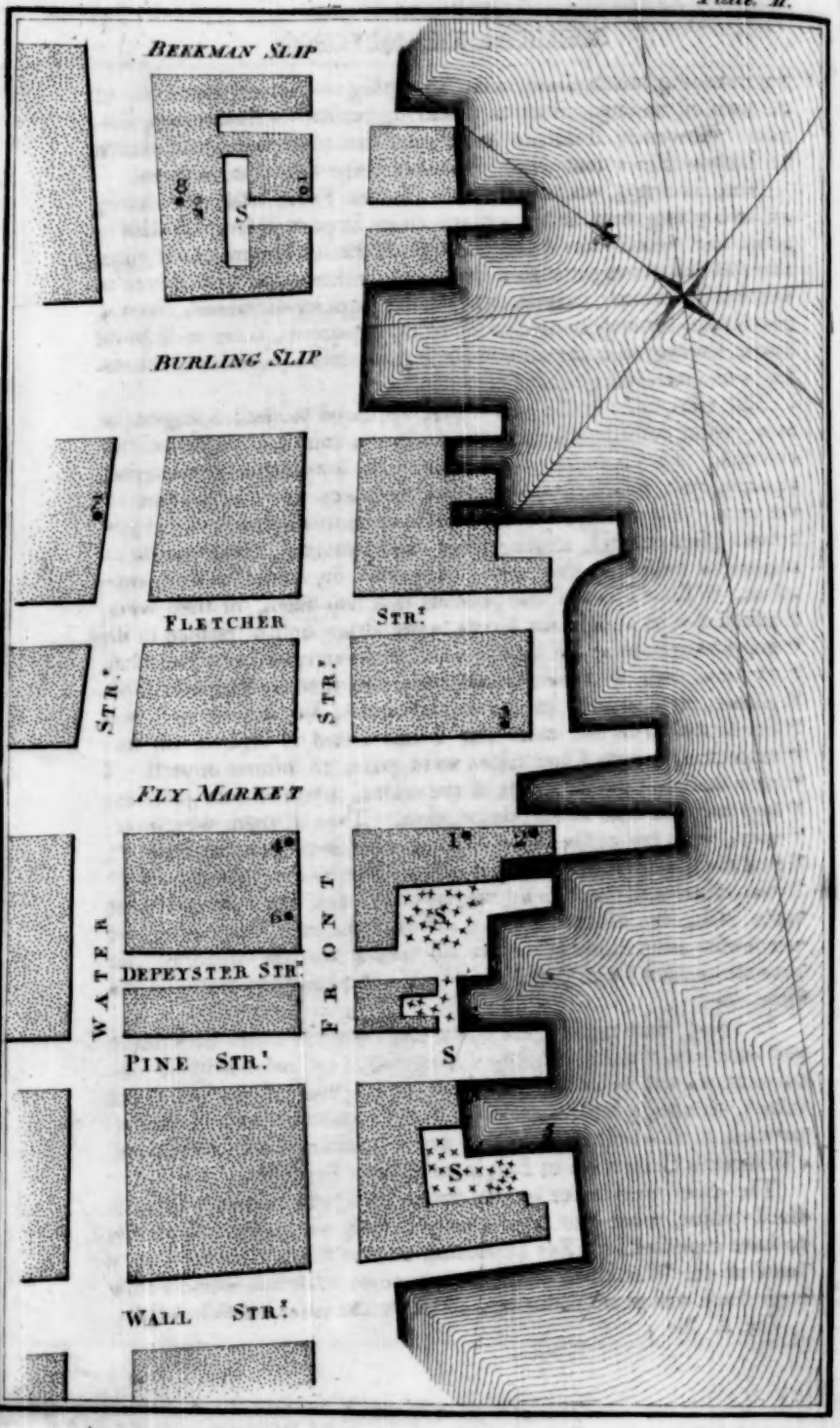
In the autumn of 1791, the Yellow Fever was considerably prevalent in a part of Water-street, in the neighbourhood of Peck's-slip, noted, at that time, for having the docks near to it loaded with every kind of filth that could be scraped up out of the adjoining slips, which had been long collecting every species of corruptible materials that the citizens wished to get rid of. (See also Jonas Addoms' Inaug. Dissert.)

In 1792, at the season wherein those complaints mostly prevail, a long indisposition confined me to the house, and prevented

* Currie's charge upon those who dare to think differently from him.

† By the remaining predisposed inhabitants, I mean to include only such of those that continued in town, who had not undergone the complaint before, as a former generally screens us from a future attack, at least a fatal one.

Plate. I.


BEEKMAN SLIP
BURLING SLIP
FLETCHER
STR.
STR.
STR.
FLY MARKET
WATER
DEPEYSTER STR.
PINE STR.
FRONT
WALL STR.

my knowing much about what was going on out of doors, or of the state of the city, either as favouring health, or threatening disease. However, I did not understand that there was much alarm of Yellow Fever that year. Probably there was little or none.

Nor, in 1793, was the alarm of Yellow Fever heard of among us, excepting from a few solitary cases imported from Philadelphia, and which was lost in the fate of the unfortunate individuals who had brought it from its source, without the least injury to the healths of our citizens, either in the capacity of friends, nurses, physicians, or neighbours; none of these patients, as far as I could learn, having been permitted to seat themselves in places abounding with putrefying substances.

The complaint in the year 1794, appeared to such a degree, as to occasion considerable uneasiness in the minds of many of the citizens. *The Committee for preventing the introduction of contagious diseases*, met regularly to establish measures for the welfare of the city. To them, in a communication made the 11th of 9th month (September), among other circumstances, I intimated as a reason for believing that it was supported by causes within ourselves, "That most of the patients that had been, or then were, "affected with dangerous fevers, were either such as resided in the "neighbourhood of the slips, (which then were or lately had been "cleaning out) or whose employment led them to frequent those "places; as cartmen, measurers, labourers, &c. at least such was "the situation of the cases that I had heard or known of, and "respecting which I had taken some pains to inform myself. I "then had, at that early part of the season, attended four patients; "and they were all of that description. Two of them were boat-"men, who lay at the New-slip; another lived not far from it; "and the business of the fourth obliged him to frequent the slips." It was observed, that during the very time that these persons were taken sick, the MUD-TURTLE (as the machine was called, the temporary suspension of whose operations was the object of that communication) was performing its pestiferous purgations on this filthy slip.

In 1795, that part of the town that bore the chief burthen of our calamity, was remarkably distinguished by peculiarity of circumstances and situation (aided by the singular regularity of our rains), seemingly well calculated for the accumulation and decomposition of all kinds of perishable animal and vegetable substances. (Webster's Collection of Papers on Bilious Fevers.)

The chief prevalence of the disease in 1796, seemed evidently fixed where, from our former experience, we ought reasonably to have expected it. For no doubt, at that time, the neighbourhood of the Whitehall, from the nature of materials wherewith a large dock was there filling up, aided by the noisome exhalations,

from the exposed bottom of the Exchange-slip at low water, must certainly have been rendered the most noxious part of the city. (Bayley's Letters, Medical Repository, No. I. Appendix.)

But it was not intirely confined to that particular neighbourhood in 1796. Four deaths from the Yellow Fever occurred, during that season, within fifty yards of where Roosevelt-street drain empties itself into an inlet which was then open quite up to the southerly side of Water-street; the bottom of which (S on plate I.) was frequently in part left bare even at high water. Every ebb-tide exposed at least eight hundred square yards of its surface, covered with the numerous perishable materials, furnished by the different streets of that crouded part of the town, which descend into this common sewer, in addition to the other putrid matters that such handy places are always collecting.

One of them, James Callender (marked .1 on plate I.) was an Irishman, who had resided about five months in this city, and was the first that I could hear of who had the disease in that neighbourhood. He died on the 22d of 7th month (July,) after a few days illness, with a yellow skin, and smelled extremely offensive, as I was told by those who assisted in burying him. Two others, of the above cases, came under my own particular observation, and were decidedly of that complaint. Both of these patients were foreigners just arrived from London. One of them (.2) I attended. He had been in town but five days when he was taken sick: On the fifth day afterwards, 19th of 8th month (August), he died, with coffee-ground vomitings and yellow skin. To the second (.3) I was called a few hours before his death, to determine whether he was a proper object for the New-York Hospital. He had been more or less indisposed, from the second day after his arrival, which was on the 2d of 10th month (October), but was not seriously taken till the fifth. He died on the seventh day of his disease, very yellow, but I know not what was the nature of the matter he puked up. I was told he had been much distressed by his sickness of stomach. The last (.4) of these four patients died the 20th of 9th month (September), after five days illness, with yellow skin and dark vomiting.

Another person also died with this complaint, some little distance off, in Cherry-street (.5). I saw him in the latter stage of his complaint, in conjunction with the physician who had attended him from the beginning; and we were perfectly agreed as to the nature of his disease. He died the 21st of 8th month (August), on the seventh day of his complaint, with yellow skin.

Besides these fatal cases, there were a number of persons also, that were seriously affected by severe fevers, but yet recovered, (designated ⊙ in the plate.) I attended three of this description; one of them lived in a house built upon piles, over a part of the

above-mentioned flat; another passed a great proportion of his time, during the day, in a store adjoining it; and the last lived in Cherry-street, and the yard of his house backed upon Water-street, about eight rods distant from the same spot. Dr. Borrowe informed me, that he had also attended one, at the corner of Water and Roosevelt streets, with the complaint well marked, and from which he, with difficulty, recovered.

There were several other cases of fever, of a suspicious nature, though slight and soon recovered from. Their situations are marked (o) on the plate.

It may not be amiss here to observe, that none, as far as I could learn, that had the fever in 1795, suffered with it in this neighbourhood this year, excepting one of the slight cases above-mentioned: Its general prevalence the year before was, perhaps, the reason why no more were affected about this spot this year; their former indispositions probably securing them against a second attack. This much is certain, that the nine patients first above-mentioned, had not had it in 1795. Indeed, seven of them might be said not to have been exposed to its cause; one having lived only a few months in town, two having just come from England, one absented herself from town in the sickly season, two had lately come from the country, and one that year lived at the Whitehall; and one of the others continued in town for only a part of the time during the epidemic of 1795.

Why the disease did not become as general about the easterly low part of the city in 1796, as in the year before, probably was owing to the removal of most of the causes that were supposed to have promoted such complaints; and perhaps also, in a degree, to not having such regular rains, to favour the deadly operations of remaining deficiencies. (See Webster's Collection of Papers.) Many of the lots in that part of the town had been filled up; the filth and dirt of the streets and yards had been more carefully cleared away; the unpaved streets, in general, had been paved and regulated, so as to prevent any water from standing in them; and several of the slips and vacancies under the stores set upon piles, had been filled up with wholesome earth. But, in this devoted spot, partial neglect, we see, was followed up by its predicted, I had like to have said merited, consequences.

It remains to notice the disease as it has shewn itself among us this season. The cases that have occurred being too numerous to attempt to get an accurate history of them all, and the want of proper marks to identify it where it is slight, if attempted, would, at best, leave but a very objectionable result: I have therefore only noted the fatal ones; nor do I think we need much to regret the omission of the others, since, from the number of deaths, we can nearly calculate upon its degree of prevalence, and particularly

since the proximity of cause will, most probably, correspond with its mortality.

To proceed. 1st. William Cummings, two days after having taken his lodgings in East George-street, was attacked on the 1st of 9th month (September), with chills, head-ach, and the other common symptoms of fever, which increased in the night with delirium, &c. The next day many circumstances giving occasion to suspect his complaints to be of a dangerous nature, he was carried to the Lazaretto, on Bedlow's island, where, in a few days, I have understood, he died.

2d. Margaret Wiggins, in the same street, was taken on the 14th of the same month. On the fifth day of her disease, according to the account of the person with whom she lived, she puked a black, offensive, ropy matter. Two days afterwards, on the morning of the 22d, she died very yellow, and with black effusions about her breast.

3d. —— Brown was taken the next day, the 15th, and died also on the morning of the 22d. He had vomited, during his disease, much blackish bloody matter, and was very yellow.

4th. —— Price, after having passed a part of the evening of the 16th of 9th month (September), in East George-street, was taken in his return home at midnight, with dizziness and lassitude, succeeded by a chill, followed by a hot fever, &c. He died on the 19th, very yellow; he had, during his disease, puked a black matter.

5th. William Templeton sickened on the 16th, with chills, &c. and died in the afternoon of the 22d, very yellow.

6th. John Busson was taken on the same day with Templeton. During his disease he puked much: the nature of the discharge I could not learn. He died on the 23d, with yellow skin, and blackness about his neck and breast.

7th. A lad, by the name of Parcells, died in Cedar-street. His mother lived in Henry-street, two doors from the corner of East George-street, where he used frequently to pass his evenings, and sometimes to stay the whole night. He became sick on the 19th, of the complaint of which he died on the 23d. According to the account of his physician, his must have been a decided case of Yellow Fever. He had the black vomiting and yellow skin.

8th. Seth Fairchild was taken on the 27th of 9th month (September), and died ont he 2d of 10th month (October), with black vomiting and yellow skin.

9th. George Ross was taken sick the 11th of 10th month (October), and died on the 20th. He had puked a blackish matter. His skin was yellow.

10th. —— Hulshart was taken on the 12th, and died on the 17th of 10th month (October). He was yellow, and had puked, during his illness, a greenish brown matter, and purged clear blood.

All the above cases appear to have originated in East George-street; and all, excepting Price and Parcells, resided within the small compass of seventeen houses, in the lower part of the street.

11th. On the 13th of 9th month (September), John Holmes, after having been a little complaining for a week, according to the relation of his landlady, was taken with a chill, succeeded by a hot fever, violent head-ach, red eyes, &c. On the 19th he was sent to the New-York Hospital, where he died on the 23d, with a yellow skin, after having puked up a dark brown fecuient looking matter. He had taken lodgings in Chesnut-street three days previous to his indisposition.

12th. —— Havens, who lay on board a vessel at Lynch and Stoughton's wharf, from the time of her arrival, the 25th of 8th month (August), was taken unwell the 14th of 9th month (September), more unwell the next day, still more the day after, but not to such a degree but that he walked up to Roosevelt-street, where he took lodgings. He was confined the next day; on the 18th he was very yellow, and vomited, in great quantities, a black matter, mixed with coagulated blood, almost incessantly. He discharged the same by stool, and died in the night of the 19th.

13th. On the 17th, Samuel Suydam, who resided near the Exchange, in Water-street, but who passed the greatest part of his time, during the day, in his store, a little to the east of Lynch and Stoughton's wharf, in Front-street, was taken down with his complaint, which terminated fatally, on the morning of the 23d. His physician informs me, that his disease appeared to him to be a Yellow Fever of the most malignant type. He had the black vomiting to a great degree, and his skin was very yellow.

14th. —— Kelly (.1 of plate II.) was taken on the 7th of 9th month (Sept.), with fever, attended with a particular determination to his head, not skin, and great derangement of his mind. His complaints being suspected of a malignant nature, he was conveyed to the Lazaretto on the 13th; where, a few days afterwards, he died.

15th. Daniel Wiggins, who lived in the lower house on the west side of the Fly-market, (.2) his physician tells me, was, on the 20th of 9th month (September), attacked with a fever, which assumed a most malignant appearance, attended with black vomitings and a yellow skin. He died on the 28th.

16th. John Van Deventer, (.3) as the family informs me, was taken on the 20th of 9th month (September), and died on the 29th, with a yellow skin.

17th. Samuel Hitchcock, at the corner of the Market and Front-street, (.4) sickened on the 23d, and died on the 29th, in Fletcher-street, where he had been conveyed after he became unwell. His attendant, in her simple narrative of his case, says, he puked matter just like the grounds of coffee, but he was not yellow.

18th. James Hamilton belonged to the schooner Ellice, which arrived on the 16th of 9th month (September), after eight days passage from Richmond, in Virginia. He was employed in assisting to unload her, at the easterly side of Murray's wharf (.5). He was taken sick on the 27th, and then took lodgings at the Crane wharf; where he died in the morning of the 30th, with pukings of a greenish matter, and with a yellow skin.

19th. T. Comstock resided in Front-street, between the Market and Depeyster-street (.6): he was taken on the 28th of 9th month (Sept.), and was afterwards carried to the New-York Hospital; where he died on the 3d of the next month, with a yellow skin.

20th. J. Rogers (.7) was taken in the night of the 20th of 9th month (September), with chills and sickness at stomach, followed by a hot fit, which was succeeded by a sweating. In the morning he was so well as to be about house. His complaints returned towards evening, without a preceding chilliness, and continued, with little or no abatement, till his death. He did not have much sickness at stomach, nor great pain in his head. The tunicæ conjunctivæ of his eyes appeared bloated, with a reddish yellow fluid: his skin was yellow; his pulse most of the time soft, and not frequent; and he was much harrassed with a very painful hickuping, with short intermissions, for about twelve hours before his death; which occurred on the morning of the 26th.

21st. Abel Beers attended a store in Water-street (.8). He was taken with chills, pains in his head, &c. on the 10th of 10th month (October), and died on the 16th. During his fever, which regularly remitted every morning, he was much deranged in his mind; his bowels were constipated, and stools, procured by art, dark; his eyes and skin became yellowish on the fourth day; he puked a brownish matter several times on each of the two last days of his illness, and vomited a great quantity of blood just before his death. After death, the skin was observed to be universally yellow, except that there were purple effusions about the neck, breast, and on the lower extremities.

22d. Elias Mowatt, in William-street, died on the same day, of a fever with which he was attacked on the 12th. During his complaint, he had, several times, puked a black matter: he had some yellowness about his neck.

From the foregoing list, which comprehends all the deaths from this fever, which have occurred in this city this year,* up to the present date, as far as I can learn, it appears that nearly one half

* Since writing the above, one other death, and only one, has come to my knowledge, and the present steady coldness of the weather and hardness of the frost, seems intirely to have checked the disease; it is not probable a single case of it exists in the city at this time.

of them originated in a small part of East George-street; and the greater part of the remainder near about, and just below the Fly-market. We are, therefore, naturally led to examine the situation of these afflicted spots, to ascertain the cause of its particular prevalence there. And, indeed, the southerly part of East George-street, where the complaint prevailed, (if we can suppose filth and putrefaction of any kind to produce it,) seemed well prepared for the purpose. The street itself, unpaved, was so rutted and broken up, in particular parts, as effectually to prevent it from being kept dry. Frequently, for some time after wet weather, it was almost impossible for footmen to pass through it, without miring half shoe deep; and, at the best of times, one fourth of this particular part of it was a filthy mud-puddle. Besides this, most of the houses are occupied by several families; all of whom have the yard in common; and really, upon inspection of these places, all of which are lower than the street, one's mind is struck with an idea that the several joint-tenants are not only determined not to clear away the other's dirt, but also that each one exerted himself to put, *at least*, his share into the noisome collection; because he had as good a right to make dirt as his neighbours. Hence these sunken spots became a dreadful mass of garbage and offal matters of every kind. This, however, was not the case with all: One house, the cellar of which contained fourteen persons, men, women, and children, black and white, all huddled together, having no yard at all. But here there was no loss in the end; for what of every refuse and excrementitious matter the yard would otherwise have gained, was here thrown into the open street; the common place for all kinds of putrefiable substances. But, beside this, at the upper part of this affected portion of the street, between four and five rods up Lumber-street, is a declivity that appears to crave every kind of rubbish that comes near it; nothing seems to be too gross for it; even the night-man's filthy load, as I have observed, here finds a free reception.

The cause of the prevalence of this disease near the Market, appeared very evident upon examining the spot. The south-eastern end of Pine-street, (S on plate II.) lies considerably lower than the dock which is continued from it; so that it there keeps a constant puddle of stagnant filthy water and mud. But this is a mere trifle in comparison to its pestilential neighbours. The slips (S S) on each side of this central spot, have been left, during the summer, to be fortuitously filled up by the free contributions of the neighbourhood. Hence they became the common receptacles of rubbish and filth of every description. I have seen in them the guts and trimmings of fish, shavings, the clearing of shops, mud, that appeared to have been the cleaning of sinks, cabbage leaves, potatoe peelings, &c. &c. and further, to render this noisome collection the more complete, the necessary night-man did

not fail to do his part: more than once have I observed their fulsome loads exposed in these places, and that even above the ordinary mark of high water. But beside all this, the spaces on the annexed plate, marked S with crosses, particularly that to the north-eastward of the dock, has, from its being open and so contiguous to the Market, become the common convenience to a multitude of people; and indeed so effectually have they bespattered the ground with their excrementitious depositions, that it requires a good degree of circumspection in walking there, to tread clear of the filth.

Havens and Suydam appear to have taken their complaints in an atmosphere contaminated by the emanations from the exposed flat at the inlet by Lynch and Stoughton's wharf. This inlet, including the spaces under the adjoining buildings on each side, which are set upon piles, exposes a surface of mud and every kind of filth that is constantly gathering in such places, of at least one hundred square yards at low water: and, as though it was feared that the parts under the stores should not receive their share of what is so freely thrown into such reservoirs, several of the boards of the platform before the door are left loose, so as to be taken up at pleasure: and, indeed, the pile that is heaped up under the opening shews that it has well answered its purpose. Still more completely to involve this dock in the most offensive effluvia, at the end of it is affixed a conveniency, erected, it is true, over the water; yet, with seeming care, such obstructions are introduced under it as to support great piles of matters, not less offensive to the smell, than disgusting to the eye. Havens attended and slept in a vessel that lay at this very wharf; while Suydam attended his store about eighteen yards from it, and in a direction for the regular southerly wind to blow the whole power of this loaded atmosphere upon him.

Rogers lived in a part free from the circumstances attending the residence of the afore-mentioned persons. Might he not have picked up his complaint at the Market?

Beers (.8) spent the day in a store between Beekman and Burling slips, which is remarkable for backing upon an inlet in the form of a T, that opens into Front-street. This place is unpaved, and, too much like many of the Philadelphia alleys, is bounded by the backs and gable ends of houses, and by yards, without a single house fronting it. It contains upwards of 200 square yards; one third of which, at the most moderate calculation, is constantly covered with mucky filth of one sort or other. It may be thought strange that this place should furnish us with but one death. This may have been owing to two causes. In the first place, to its being surrounded, in great degree, by stores that are only inhabited during the day; and secondly, to most of the inhabitants near it being

old residents. However, two other persons, to my knowledge, have here suffered with the complaint, both of whom recovered. One, Moses Judah (02), occupied and slept in the same store that Beers attended: and the other, George Burchell (01), resided in a house at the corner of this place and Front-street. They both had removed to this place this year, and Abel Beers (Judah's apprentice) had never spent a summer in New-York before.

Holmes, who died at the Hospital, took his complaint in Chesnut-street, the next door to the corner of Bancker-street. This same spot, at the junction of these two streets, is unpaved and sunken, and seems not only to solicit the accumulation of every thing worthless or unclean, but also to forbid the idea of any attempt to clean it out, lest it would make the pond the deeper. Indeed, so remarkable was this spot, as to make me, as early as the 7th month (July) last, request both of the Health Commissioners and the Alderman of the ward, to give some attention to it; as I considered it a place highly favourable to the promotion of Yellow Fever. However, it was not amended. Fortunately for the remaining inhabitants, they were a hardy set; most of them had undergone the fiery trial of 1795, in their families, and the remainder were old residents in town, as I have been informed, excepting one person, who lived the very next door to where this man was taken; but he luckily had been several months of the summer out of town, and did not return till some time after Holmes died.

The last person mentioned as having died of this complaint, resided in a healthy, cleanly part of the town: and how or where he could have taken his disease is still a mystery. Possibly he might have received it at some one of the sources above-mentioned.

These circumstances, being well considered and candidly examined, I think must clearly prove to every unprejudiced mind, that in this city there appears to be an intimate and inseparable connection between the prevalence of the Yellow Fever, and the existence of putrid effluvia: whether it be septon or hydrogene, or whatsoever other peculiar principle that is the active ingredient of their composition, is not my business at present to inquire into; nor shall I pretend to decide whether these effluvia alone are the sole or original cause of the complaint; or whether, merely like a smoaking hot combustible, it burns only after having received a spark from elsewhere. However, from some facts, particularly that from the Busbridge Indiaman, (Annals of Med. vol. I.) and others that might be brought if necessary, it seems highly probable, that such matters may, of themselves, sometimes burst out as it were, into actual flame at some point; from whence a general conflagration may spread through and involve the whole of these susceptible materials.

In 1795, from the inseparable connection observed to exist between this disease and putrid miasmata, I had strong suspicions of their being its sole cause; and, indeed, the evidence then adduced to the contrary, by the advocates of importation, being so weak and ungrounded, seemed rather to support the idea: however, from subsequent inquiry, and more minute information, in regard to some circumstances, not then so generally known, it now appears to me probable, that a foreign *fomites* might at first have excited our pestilential vapours into the action that spread such devastation in the most afflicted part of our city.

The brig Caroline arrived from Hispaniola on the 19th of 7th month (July), 1795, and hauled in at Dover-street wharf on the 20th; where, on that and the two following days, she discharged her cargo. She had lost one hand on her passage, his symptoms unknown. George A. Valentine, who attended the vessel after her arrival, was taken ill with the fever on the 25th of the same month, but recovered. On the same day, "four persons from "on board the ship William, from Liverpool, which arrived here "several weeks before, (all the hands having, previous to that day "and during the voyage, been perfectly healthy) were taken ill "with fever, attended with a yellow skin, hemorrhagies, vomiting "of black matter resembling coffee grounds, &c. and all died "within seven days." (Health Committee's Letter to the Governor.) It may be observed, that this ship and the Caroline lay at opposite sides of the same wharf, and that the people of both were employed on this wharf, at the same time, in unloading their cargoes.

On the same day also, "the owner of the ship Connecticut, "that had lately arrived from some part of England, and which "had drawn in at the next wharf, about the 20th or 21st of this "month, was seized with the fever, from which he recovered; "and about the same time, one of the mates, the steward, and two "of the hands, were seized in the same way, and all died." (Smith's Letter to Buel.)

Benjamin Paine, a custom-house officer, who was at that time attending the brig Active, which lay in the same slip, was likewise attacked on the 25th: he died on the 30th.

William Fitch's clerk, who was occupied in a store on the next wharf to where the Caroline lay, was taken on the 26th, and died a few days afterwards.

A. Jenkins, at the head of the wharf, was attacked on the 30th or 31st, and died. A few days afterwards, several of his family were taken sick, and the disease began to spread through the surrounding neighbourhood.

The circumstance of so many persons being taken on the same day, renders it highly probable, that some exciting cause of this

disease must have been introduced by the Caroline; since, had the contagion arisen from the pre-existing circumstances of the place alone, it is not likely that it would have shewn itself in so many instances at the same time. In that case, we should have looked for one to have been first taken, from whom a principle might be derived to stimulate the vapours of that noxious neighbourhood into their pestiferous operations. Had the disease, in these instances, originated solely from the surrounding filth, we should not have expected to find the men of the Connecticut, and those of the William, taken at the same time; since the former had drawn in there only *about* four or five days, whereas the latter had lain there for "several weeks" before they were taken sick.

In 1796, the brig Patty, Capt. Snow, from St. Bartholomews, arrived on the 28th of 6th month (June), and not July, as erroneously stated (probably by an accident of the press) in Dr. Bayley's Letter. (Medical Repository, No. I. Appendix.) This vessel drew in at Delafield's wharf; which is the next to the dock that was then filling up, and is adjoining the Exchange-slip; and although "*none of the crew had been sick of a malignant fever*," still she might have brought a *fomites* sufficient to set the putrid miasmata of such a place into a pestilential action. Jonathan Thompson, a shop-keeper, who lived No. 24 Moore-street, but a short distance from this dock, and upon which he was in the daily habit of taking his walk, became sick on the 4th of 7th month (July), and died on the 10th, with well marked symptoms of a highly malignant Yellow Fever. Capt. Neal's wife, who resided half way between the Exchange-slip and Moore-street, in Front-street, was seized on the 7th, and died on the 10th. Nathan Strong died on the 17th; from which time the disease became more and more general about the neighbourhood of the dock that was filling up, as stated in the letter just referred to.

The first person who died this year about the disemboguement of Roosevelt-street drain, if I am informed rightly, was James Callender (.1 on plate I.). He was a labouring man, who was employed somewhere towards the lower end of the town; and perhaps he was affected with the complaint from being about the Exchange; and transported, by his disease, the seeds of infection to that fertile neighbourhood in which he lived.

In 1797, the first person that was taken sick in East George-street, was W. Cummings: he arrived the 13th of 8th month (August), in the sloop Polly, from George-town, South-Carolina. One hand died on the passage, and Cummings was slightly indisposed at the time of his arrival, with what he supposed an ague and fever, but was not taken seriously unwell till two nights after he had lodged in this street. It may be, that a partial principle of death lurked in his system, during the whole time after the death of his

comrade, and most likely, never would have seriously acted upon him, had he not immersed himself in this or some such like fury-fostering miasmata. From him the disease seems to have spread. Two of his next door neighbours fell under its power, and it extended itself, as above related, through all the most offensive part of this street.

—— Kelly, of the brig Bellona, (which arrived the 3d of 9th month (September), from Savannah, with all her hands and passengers in good health) unfortunately pitched himself within the noxious effluvia of the Fly-market; and, still more certainly to fix his fate, lodged in a room, two of the windows of which opened towards the places where the putrid collections were gathered, and from whence the southerly winds must have brought their vapours immediately upon him. He is the first that appears to have had the disease in that neighbourhood; and perhaps the effluvia arising from his body, united with the putrid vapours emitted from the collections before noticed, spread the complaint around this little vicinity.

Another of the hands from the same vessel, took up his quarters at Chesnut-street; where he met with the necessary ingredients to bring his latent poison into life. He was afterwards taken to the New-York Hospital, where he died. It may seem somewhat strange, that the cause of disease that must have been kindled up at this spot did not affect any of his neighbours; probably, from circumstances already mentioned, they were proof against its operations.

The systems of the two persons who lived at or near Lynch and Stoughton's wharf, being richly loaded with the emissions from that offensive spot, might possibly have catched a spark of excitement in passing near the Market.

George Burchell may have taken his disease, after having been immersed in the effluvia from the inlet between Burling and Beekman slips, from the hands of the same vessel, as they frequented his shop immediately after their arrival. He probably set the whole materials in action, whence Beers and Judah were afterwards affected.

The other persons mentioned in the list of deaths, may have received the cause of their complaints at one or other of the aforementioned sources.

These circumstances render it probable that the cause of Yellow Fever, in the particular parts of our city, has, of late, been set in action by an enlivening spark from abroad. However, I do not consider it as decidedly determined. It is possible that Cummings, having suddenly changed from a purer air, with his already infirm body, to this hot-bed of putrefaction, may, from those predispositions, have had the disease created in him, before it had ripened

in the bodies of his neighbours; and he thence may have introduced the principles of his complaint to the surrounding air.

Just arrived from sea, and of a profligate habit, Kelly might thence have been a person, more than any other about the market, prepared for the deleterious operation of the putrid vapours in which they were enveloped; and thereby have been first affected by surrounding causes of fever; and, in turn, may have imparted a principle to the air, that usuriously repaid it for its fatal effects upon him.

And although James Callender worked towards the lower end of the town, there is no proof of his having brought his complaint, or even of his having been at Whitehall. Nor, indeed, is it certain that the Patty imparted any principle of disease to the poisonous vapours of that neighbourhood.

The Caroline, it is true, lay at Dover-street wharf for some days before the people thereabout became sick; and although such a number becoming suddenly sick, at the same time, and so soon after her arrival, render her very justly suspected, still it is possible, that, from the particular and similar predisposition of most of them, only one having been an old resident, and, all excepting three, having lately come from the same place, and having been alike accustomed to the same habits of diet, exercise, &c. they may have had the complaint generated and arrived to maturity in them all at the same time. From which beginning, the disease might have been communicated to the whole of that peculiarly filthy part of our city, in 1795, without the necessity of believing that the Caroline brought any deleterious principle from Hispaniola. Although the circumstance of some of these people having lain at that place a much longer time than the others, and others again having continued there during the whole summer, shew, beyond a doubt, that some cause of the complaint must have *began* to operate after the 20th of the month, still this does not necessarily devolve upon the Caroline: perhaps some particular change in the air,* or some other peculiarity might have occurred, just at that time, to have given the putrid miasm its rankest perfection.

Whether the complaint is ever generated by putrefaction *alone* or not, still I am rather inclined to believe, that, *generally*, in our city, it has been set in action by an *assisting* cause from abroad. For, did simple putrefaction of itself give rise to this complaint among us, we should expect to find more or less of it, in that row of tenements called Moore's buildings, in the years of 1796 and 1797. For although those buildings are set upon high

* It must, however, be acknowledged, that no particular change was evident in the *temperature* of the air. (See the Meteorological Observations in my account of the Epidemic of 1795).

ground, still they are upon a perfect level, and are the most crowded with, perhaps, the most dirty set of residents of any in the city; and these chiefly newly arrived Irish people. Still I cannot learn that a single case of Yellow Fever has been there for these two years past. And, I can hardly believe, that if a person with that complaint had been introduced among them about six weeks ago, but that he would have spread mortality around him.

In East George-street also, during the last year, we should have expected to find, at least, a few cases of the complaint; yet I cannot, notwithstanding the most diligent inquiry, find a single instance. Had a single instance occurred, probably it would have caused a general prevalence there.*

In addition to this, it may be observed, that the singular filthiness that has existed in different parts of our city, and particularly about some of the slips, towards the lower part of the town, for several years before 1791, was not attended with any material injury to the health of those in its vicinity; at least, we have no account of the Yellow Fever's spreading around them.

In the years 1792 and 1793, the mud machine was employed in clearing out the docks, the same as in the preceding and the succeeding years. But we heard of no Yellow Fever being the consequence.

But that the simple emanations from a person under the Yellow Fever, without the joint action of putrid miasmata, *will not* produce a like disease in another person is very clear, not only from the many facts heretofore adduced in the accounts of that disease, as it appeared in 1795, (see Webster's Collection of Papers) but also from the confirming occurrences that have happened this year. The person supposed to have enkindled the disease in East George-street, as well as the one at the Market, were both conveyed to, and died at Bedlow's Island; yet none of the boatmen that took them there, nor any of the attendants, nurses, or those confined in the Lazaretto with other complaints, suffered any indisposition from them. A person, as I am informed, who took his complaint

* I am aware of an objection that may be made to this idea, in accounting for the healthiness of this street it 1796; first, that the preceding year's depopulation, and the dreadful character that the street sustained thereby, probably prevented it from being so crowded as before and since; and, secondly, that the street having been filled up during that summer might prevent so great an accumulation of filth. In answer to this it may be remarked, that notwithstanding the character of the street, it had not been observably more thinly inhabited; and although the street was filled up that year, yet that was done in the fore part of the summer, and some time before the sickly season, and that the yards were equally unfavourably situated as before or since; and that although the filling up of the street might have had its use, still we can hardly believe such a partial business would have produced such an intire exemption from this disease, had filthiness been its sole cause.

at Philadelphia, was also carried to the Island, and was there attended by his friends, who had come directly from the fresh free air of the country, and with as little inconvenience. Two of the patients afore-mentioned died at the New-York Hospital, one from the market, and the other from Chesnut-street; yet they communicated the disease to no one there. Parsells, who died in Cedar-street, infected no one in that neighbourhood. Nor did Suydam spread any disease around the Exchange where he died; and Havens' complaint terminated with his existence, in the upper part of Roosevelt-street.

To the foregoing circumstances may be added, that about the same time that Kelly and Holmes (the former of whom is supposed to have introduced the disease about the market) arrived from Savannah, there also were several other arrivals from the same place, none of whose hands, or passengers, as far as I can learn, suffered with a like disease;* probably from their having taken more eligible lodgings.

The simple result of the foregoing facts and observations appears to be,

I. That the general cause of the Yellow Fever, as it has appeared in this city, is what chemists call a *tertium quid*, neither one thing nor the other, but a result of the junction of certain matters emitted from a human body, labouring under such a disease, with the effluvia arising from animal and vegetable substances in a state of putrefaction.

II. That putrid effluvia may possibly, of themselves, generate the disease in persons highly predisposed, and from whom, by their assistance, the fatal epidemic may be spread through a neighbourhood.

III. That most probably, the spark that has kindled up the putrid vapours, in certain parts of our city, into action, was originally introduced from other places. And,

IV. As I have uniformly believed, and repeatedly expressed, "*that no Yellow Fever can* SPREAD, *but by the influence of putrid* "*effluvia.*" (Account of the Epidemic Yellow Fever of 1795.)

Hence then, the grand, the much agitated "question of im-"portation or non-importation, as it respects the health of a place," to use the words of Dr. Smith, "sinks into its merited insignifi-

* This, perhaps, by some, may be thought inaccurate, as one of the hands of the Shepherdess died soon after her arrival here, and, as was currently reported, of the Yellow Fever; but, from inquiry, I do not find that his indisposition exhibited any marks of that disease. He did not vomit at all, at least after he was on shore; nor was he in any wise yellow; he being, when dead, according to the expressions of his wife, "as fair a corpse as any in the world."

" cance; the efficient cause, the *causa sine qua non*, being clearly dis-
" cerned as depending on local circumstances." (Letters to Buel.)

To depend, therefore, for our safety from Yellow Fever, upon the rigours of our port laws, or the vigilance of our Health Officers, while these pools of putrefaction are suffered to remain, is like building a city with cedar and pine, and confiding in the *watch* to secure us from fire. But if these pregnant sources of destruction are dried up, we may, like those who case the wooden work of their brick-built, tile-roofed houses, with iron, rest at ease in our habitations, equally secure against the deceitful captain's intrusions, or the incautious sailor's blundering into our ports, in the one case, as, in the other, we should be of the vile incendiary's match or the careless neighbour's spark. As the latter would die in their own combustion, so the former would end in the fate of the single sufferers.

To rest our security from the Yellow Fever (should it finally appear that it is always imported) *solely* upon the slight precaution of making such vessels, from the West-Indies and Southern States, as may have, or may have had persons with that complaint on board them, do ten days or two weeks quarantine, must certainly be a very venturesome business. The Patty had not had any of her crew sick with a malignant fever. The people of the Bellona were in good health from their leaving Savannah, till some days after they were in this city. And the Polly might have done the usual quarantine, without any security to us, as Cummings was not seized with his disease till seventeen days after his arrival.

Nothing less than completely prohibiting all commercial intercourse from the Southern States and the West-Indies, during the summer and first fall months, or (what would, in the end, amount to the same thing) making every vessel from thence do full quarantine, and have their cargoes unloaded and properly unpacked and ventilated, before they are permitted to come into our city, can ensure us against the introduction of a cause of the Yellow Fever: however, these severe restrictions may be superceded by merely having ourselves properly prepared. If we only keep decently cleanly, it will be perfectly indifferent to us, whether a Carolinaman or a West-Indian should die with Yellow Fever in our city or in our harbour, since, then, we should be guarded against any ill effects from them.

New-York, 10*th Month*, 1797.

ARTICLE III.

A SINGULAR CASE OF DIFFICULT PARTURITION SUCCESSFULLY TREATED.

By Dr. THOMAS ARCHER, *of Harford-Town, Maryland.*

[*Communicated in a Letter, dated September* 22, 1797, *to his Brother, Dr.* ROBERT H. ARCHER, *of Baltimore; and by him tranſmitted for inſertion in the Medical Repoſitory.*]

ON the morning of the 9th of May last, I was requested to visit a servant woman of Mrs. E——s, who had been in labour four days. On examination with my hand to know the situation of the child, I was surprised to find that the os uteri was not dilated to more than the size of a cent. It formed a thick, rigid, cartilaginous-like ring, not yielding, nor becoming softened by the pain. The midwife in attendance informed me, that the patient was in her 30th year; that at her 15th year, she had a prolapsus uteri, which was reduced after it was washed in a strong decoction of white-oak bark and dusted with powdered resin; that this was her first child; that her pains had been considerably forcing; but the intervals between them long; and that the waters had been gradually discharging for two days. From this statement of her situation, I did not doubt but her labour would be lingering. Her constitution was robust and strong. Her pulse was evidently marked with symptoms of tension, or convulsive action. I let blood to 18 ounces, directed gentle laxatives, with emollient glysters to be administered occasionally; oleaginous injections into the vagina and the vapours of hot water were advised, as means for relaxing the os tincæ. She took a dose of opium and stramonium to procure rest, and remove unprofitable pains. I now left her to the care of the attending midwife, till the following day in the evening.

10th. At this time there was no perceptible alteration in the dilatation of the os uteri. The child's head could now with difficulty be felt through the os uteri, which was advancing with every pain, without dilating in the least. A few pains protruded the uterus, with its contents, without the os externum! The child was now evidently dead, which, from several well marked circumstances, had taken place about two days previous to the present period. I dreaded the event of a case so new and alarming, and informed her mistress there was scarcely a chance for her life; that it was possible to deliver her, but the consequence of the

operation might be fatal to her. The distance of a physician rendered it impossible to call a consultation. Death appeared as the closing scene of every plan I proposed; in fact, her situation required such immediate assistance, that there was scarcely a moment for deliberation. To leave a mass within the uterus, which was hourly becoming more offensive, and to be an idle spectator of the fatal event that must ensue, was depriving her even of the chance which a doubtful and desperate remedy afforded.

I recollected having read several well attested cases, where the uterus was lacerated by its violent contractions round the body of the child in parturition. The child was squeezed partly through the aperture into the abdomen; it was, however, delivered, and the lacerated uterus healed without any difficulty or even the occurrence of an uncommon symptom. The favourable event of these extraordinary cases, determined me to hazard an artificial division of the neck of the uterus, (which appeared to be less dangerous than a laceration) to make room for the delivery of the child. Unknown to her or any of the attendants, except the midwife, who held the candle (for it was now night), with a common spear-pointed lancet, I made three incisions in the neck of the womb, which was very much distended; each about two inches in length, viz. one from the uterus leading towards the urethra; one towards the perinæum; and the other towards the left labia. The pains at this time were not strong, yet they were sufficient to expel the child. After the incisions were made, the delivery was almost instantaneous. The umbilical cord was wrapped round the body, arm, and neck of the child. The incisions produced no pain, neither was there any hæmorrhage followed the lancet. The uterus, after the separation of the secundines, which came away without difficulty, contracted and returned with but little assistance to its pristine situation. She was now put to bed and desired to be kept quiet. I directed anodynes to be given occasionally, and glysters to be administered so as to procure one or two dejections daily. Neither soreness, pain, nor fever followed this practice more than would have happened in any easy natural labour! The lochial discharges were very inconsiderable, and not at all offensive. She was up and walking about her room in three weeks after her delivery, and is now in perfect health.

ARTICLE IV.

Some ACCOUNT *of a* DISEASE *among* CATTLE, *which has prevailed in a part of Connecticut.*

In a Letter to Dr. MITCHILL, *from the Rev.* ELIJAH PARSONS, *dated East-Haddam, October* 17, 1797.

SINCE my return from New-York, I have made particular inquiry of several intelligent farmers, concerning the disease which has, for ten or twelve years past, been so destructive to horned cattle in this vicinity, and now attempt to answer the questions which you condescended to propose.

Concerning the *mineral productions of the soil*, nothing peculiar can be observed. We have here no fossil bodies except stones, which are dug for the purpose of fencing inclosures. The soil is generally stony, and the country hilly, better adapted for grazing than for tillage.

There has been no suspicion of any *poisonous quality in the dew* adhering to the herbage. The thought is new; it has struck no one's mind, nor has it been imagined, that *poisonous plants* have caused the disease.

It has *rarely* destroyed cattle so *old as three years*. In some instances, however, it has been mortal to cows, but never, it seems, to oxen. It has been most fatal to calves in autumn, and to yearlings in May and June. Some have died even in winter. The stock in point of quality, most liable to the ravages of this distemper, are the largest, most thrifty, and highest fleshed.

The symptoms of the *mortification* (for this is the vulgar name of the disease) are these:—The infected creature is found listless, unwilling to move, and commonly lying down, which an hour before was feeding, and to appearance well. A small spot, which may be covered with a man's hand, is found swollen, and soft in the leg, shoulder, flank, side, but more often in the back, in the region of the kidneys. In the course of six, twelve, or twenty-four hours, life terminates with little expression of pain.

I can give you no information of the *appearance of the intestinal canal*, for no carcase has been dissected. The stench immediately after death is intolerable. The very hide is often left to rot with the carcase. Upon skinning, the swollen spot is found to contain a jelly and black blood. A tanner has informed me, that " the hide which covered the mortified spot is often rotten;

"and that he has a number every year, which, after dressing, "have a hole of the same dimensions with the swelling."

The cause of the disease assigned by our most discerning farmers is a plethory; for it proves destructive to cattle after a change of pasture, or fodder, from bad to good. Many calves in years past, have died after feeding in the fields of grain, or in rowing in the fall of the year. This is a circumstance of which I was ignorant when I saw you.

Accordingly—*the remedies* which have been applied are chiefly of the preventative kind; such as bleeding, on a change of pasture of a better quality, and care not to permit a sudden change, from bare feed to full bite. After the appearance of the disease, many remedies were at first applied, but not one to any purpose; all remedies have been supposed to be totally ineffectual. One person, however, has imagined that he has effected a cure, *in two or three instances*, when the disease was taken in its first symptoms. After copious bleeding in the neck, he informed me, that he gave the animal his own blood to drink, which operated cathartically, and then made an incision in the swollen spot, took out the jelly and gore, filled the cavity with rum and salt; after which the recovery was gradual. In all other instances, which were not numerous, he informed me, that this remedy had done neither good nor hurt.

Thus, Sir, in the best manner I was able, I have returned an answer to your questions, relative to the pestilence which has destroyed a multitude of cattle.

If the publications you may by this time have received from your learned correspondent in Germany, contain any observations or remarks that may be beneficial in preventing or counteracting this great evil, you will oblige many in this quarter by communicating them, as all the precautions which have been used, are not sufficient to put a stop to its ravages. May your philosophical researches continue to be beneficial to your country, as they are honourable to the American name. I am, Sir, with esteem, respect, and a sense of obligation for your politeness, your humble servant,

ELIJAH PARSONS.

ARTICLE V.

A Case of CANINE MADNESS, *which terminated fatally, at Suffield, in Connecticut, on the 11th of November*, 1797.

Communicated for the Medical Repository, in a Letter, (dated Suffield, Nov. 18, 1797*) to Dr.* MITCHILL, *from Dr.* ALEXANDER KING.

DR. KING remarks, in the letter above referred to, that this is the first instance of hydrophobia which has fallen under his observation, in a practice of nearly forty years; that most of the symptoms bear a great affinity to the tetanus, some instances of which he has seen; that the symptom denominated *retching* by him, is, according to his belief, peculiar to the rabies canina; and that though he was not called to the boy when first wounded, yet he attended him from the appearance of the hydrophobic symptoms, with particular assiduity. The publishers of the Repository have thought it but doing justice to Dr. King, to insert these observations, as they may have some influence in elucidating a connection, which has long been suspected, between hydrophobia and tetanus, and as they demonstrate the fidelity of the author.

"On Saturday the 28th of October, 1797, James Remington, a lad of about six years of age, was on a visit at a friend's. When he first came to the house, he took notice that the dog which belonged to the family, growled at him, and threatened to bite him; which circumstance he mentioned to some of the people. He escaped for that time without any injury; but soon after, this lad, with a number of other boys, was at play in the street, at some distance from the house, and the same dog had followed the boys of the family to that place, and there fell upon James, and bit him in the face. The other boys beat him off, and he ran home. This adventure put an end to their diversion; and this lad, with the other boys in company, returned to the house, with his face wounded and bleeding. When they approached near the house, they observed the dog sitting by the gate. As James came up, he flew at him again with great fury, threw him down, and wounded his face in a desperate manner. One of his tusks entered the lids of his right eye, and rent them both asunder. Another perforated the cheek on the left side, and forced out two of his teeth, and lacerated his face in various other parts. In this mangled condition he was conveyed into the house, and assistance immediately

called in for his relief. After washing off the blood, and examining the wounds, the lacerated eye-lids were properly united by a suture on each lid, and the wounds dressed in the usual manner.

"A considerable degree of inflammation succeeded; and in the space of about 48 hours, both eyes were intirely closed by the swelling, and he continued perfectly blind for some days. After the inflammation had subsided, a good digestion and pretty free discharge came on, which were encouraged by stimulating digestives; in order, if possible, to prevent the effects of infection, in case the dog had been mad; which was apprehended by many people; the accident having excited a general alarm in the neighbourhood, particularly in the family, and among the friends of the wounded lad. No pains were spared to obtain the best advice, as to the mode of treatment proper to be adopted, in case of infection. He was put on a mercurial course of medicine; and the ung. cœrul. frequently applied to the parts affected. As the inflammation went off, he soon recovered his appetite, and with that his cheerfulness and activity, and appeared to be in a favourable state of recovery.

"But on Tuesday, the 10th day after he was wounded, towards evening, his friends observed that he began to droop, and did not appear so cheerful and active as usual. In the night following, he was rather restless and disturbed in his sleep, and appeared not to rest so quietly as he had done before.

"Wednesday (11th day) morning, on removing the dressings, the wounds were dry without any discharge, notwithstanding the plentiful discharge which appeared on the dressings the preceding morning. He complained of some pain in the wounded eye, and in his head; appeared to be rather dull and listless, with a slight fever, and other symptoms usually attending an incipient cold; and it was hoped that his complaint originated from that source only. In the afternoon of the same day, however, his attendants observed, as he attempted to drink, that he was attacked with starting and twitching, particularly in his neck, which drew his head back. On being asked why he did so, he replied it would do so, he could not help it. This symptom alarmed the family, and they immediately called in his attending physician, who observed that he was frequently attacked with sharp darting pains through his head and breast, attended with spasms; particularly when he attempted to drink. He therefore concluded, that these were the precursory symptoms of approaching hydrophobia. The night following he was very restless and uneasy; slept but little, and that only in short disturbed naps; frequently starting up in a fright. These symptoms increased during the course of the night.

"On Thursday (12th day) morning, all the complaints before enumerated had increased to an alarming height. He inclined to

lie on the bed, and chose not to be moved; his countenance was pale, attended with momentary flushes in the cheeks; and he appeared in a state of general debility, while, at the same time, the nervous system seemed to be excited to the highest state of sensibility. Fearfulness, anxiety, and anguish, were particularly apparent in his countenance. And, indeed, fearful apprehensions seemed to be a predominant symptom, not only at this period, but through the subsequent stages of the disease. His respiration was difficult and laborious, especially in the return of the paroxysms; which had now become frequent and distressing. At each inspiration, spasmodic catches, resembling quick and short sighs, interrupted his breath. When he attempted to drink, he was seized with violent spasms, particularly in his neck, which drew his head back with great force, notwithstanding his utmost efforts to avoid it. Barely mentioning drink to him would produce sensible agitations, and hasten the return of the paroxysm. He was able to swallow a tea-spoonful at a time, and that with great difficulty, which he would seize with eagerness, trembling and agitation. He appeared to have the same dread and aversion to the wet cloths which were used in fomenting his stomach, as to drink; and renewing them produced nearly the same effect. At short intervals of ten or fifteen minutes, he was seized with violent retching, consisting of one effort only at a time. This symptom was singular, and what I never before had noticed in any disease, (this being the first instance of the disorder within my knowledge). The noise produced by this effort was sharp and shrill, different from what is usual in retchings occasioned by sickness at stomach, and appeared to be the effects of violent spasms without sickness, as he never discharged any thing from the stomach, except a little wind. But this exertion seemed to afford a momentary respite to his anxiety and distress; and he said he felt better after it.

"This symptom bore some kind of resemblance to the singultus, but rather more like a retching to vomit; and attended him at different intervals, as the spasms were more or less violent, through the course of the disease. He would frequently shriek out in great agony, from the acute darting pains in his head and breast. These shrieks resembled those of infants in spasmodic paroxysms, occasioned by worms, &c. commonly called convulsion fits, and appeared to be the effect of fearful apprehensions, as well as of pain. At this stage of the disorder, he often complained of the cold, attended with frequent rigors. He retained the exercise of his reason; unless fearfulness might be supposed to indicate some sort of derangement in the mental faculties. His eye which had not been wounded, appeared a little red and inflamed. The pulsations of the artery were about one hundred in a minute.

"At this stage of the disease, by advice of several physicians who were present, he was put on the use of opium and musk, in large and repeated doses, particularly of the former; and the attendants were directed to keep the room filled with the fumes of vinegar. About three hours after taking the first dose of thebaic extract, the spasms in respiration were rather less frequent, and not quite so hard; the other symptoms continued in nearly the same state.

"In the evening, the pulsations were about one hundred and ten in a minute. He complained of a disury, and attempted frequently to make water without effect. He inclined rather to be up, than in bed. The catching in respiration was, in some measure, abated. The turns of shrieking were rather more frequent, attended with violent agitations, and some degree of delirium; particularly during the continuance of the paroxysms. In the course of the night the disury abated; but, whenever he attempted to drink, he was unable to retain his urine, and would call for the pot when they offered him drink, or even mentioned it in his hearing. This symptom likewise continued through the remaining progress of the disease. He could now swallow with less pain and agitation than before. He passed this night without any sleep or rest. About midnight, the pulsations were one hundred and twenty in a minute.

"On Friday (13th day) morning, there was a sensible variation in the symptoms. The pulsations had decreased to ninety in a minute, with frequent intermissions. He refused altogether to lie on the bed; but chose to continue in an erect posture. He appeared extremely wild, in great hurry and agitation, constantly in motion, and continually talking. The catching in respiration, had, in a great measure, subsided; but the virulent retching still continued. He could take liquors with less terror and agitation. About this time he began to complain that his throat was full, and felt sore. At evening a hoarseness came on. The pulsations had fallen to about eighty-five in a minute, with frequent intermissions, and were now become exceeding weak and feeble. A coldness of the extremities had been perceptible some time before, but was now very apparent. He vomited in the evening, which seemed to afford a momentary relief. He vomited again in the course of the night. The matter discharged from the stomach was no way discoloured.

"He had taken about sixteen grains of thebaic extract, in the space of twenty-four hours, from Thursday morning to this time; which had, in some measure, moderated the violence of the spasms, but had not subdued the virulence of the disease.

"Fearful apprehensions, which had been constant through the various stages of the disorder, now assumed the most formidable

aspect, and threatened a speedy dissolution. Foaming at the mouth, grating of his teeth, and, by turns, raving distraction, succeeded the other symptoms, and were among the last, in this sad catalogue of complaints, which, before morning, put an end to his life and suffering together, and brought relief to the sympathizing spectators.

REVIEW.

ART. I. *Medical Inquiries and Observations:* Containing an Account, &c. By *Benjamin Rush*, M. D. &c. &c.

[*Continued from page* 217, *and concluded.*]

HAVING taken a hasty survey of the two former, we now proceed to the third and last part of the volume before us, viz. "A defence of blood-letting as a remedy for certain diseases."

As introductory to the defence of blood-letting in fevers, Dr. Rush delivers a general view of all the usual remedies for fever, in its ordinary state; which prepares the way for comparative observations upon each of those set down under the head of evacuants.

In the inflammatory state of fever, our author supposes blood-letting to be indicated by the mode and circumstances of attack, as well as by the robust habits of such as are chiefly subjected to this form of disease—by the proximate cause of fever, depending, as he thinks, on morbid and excessive action in the blood-vessels—by the symptoms of the early stage, such as sleepiness, and an oppressed pulse, delirium, with a throbbing pulse and great pains over the body—by the rupture of the blood-vessels, arising from the quantity or impetus of the blood—by the relief obtained from remedies of less efficacy, which act indirectly in reducing the force of the sanguiferous system—and by the great advantages which have attended blood-letting in this state of fever, when used seasonably and in due quantity.

Some of these advantages are enumerated by the author, as follow—blood-letting frequently strangles fever, when used in its forming state—it imparts strength to the body, by removing the pressure of indirect debility, and thereby obviating a disposition to faint—it reduces the uncommon frequency of the pulse—it renders the pulse more frequent, when preternaturally slow—it checks the nausea and vomiting which attend the malignant state of fever—it renders the bowels, when costive, more easily moved by purging physic—it facilitates the action of mercury in exciting a salivation—it disposes the body to sweat spontaneously, or renders the operation of diaphoretic medicines more effectual—it *suddenly* removes a dryness, and *gradually* a blackness from the tongue—it removes or lessens pain in every part of the body, and more especially in the head—it removes or lessens the burning

heat of the skin, and of the stomach—it removes a constant chilliness, not readily yielding to other remedies—it checks profuse, partial, or unprofitable sweats, rendering them moderate, universal, and salutary—it sometimes checks diarrhœa and tenesmus more effectually than astringent medicines—it suddenly relieves the intolerance of light, which accompanies many of the inflammatory states of fever—it removes coma—it removes sleep—it prevents effusions of serum and blood—it prevents the chronic diseases of cough, consumption, jaundice, abscess in the liver, and all the different states of dropsy, which so often follow autumnal fevers—it prevents the termination of the inflammatory in the gangrenous and chronic states of fevers—it relieves fever, without allowing it to assume those alarming symptoms which excite constant apprehensions of danger and death—it prepares the way for the successful use of the bark and other tonic remedies—and, finally, it tends to prevent relapses.

Notwithstanding the numerous advantages of blood-letting, there have been, Dr. Rush observes, many objections to it; these he enumerates, and endeavours to refute in the following order, viz. warm weather—being born and having lived in a warm climate—great apparent weakness—infancy and childhood—old age—period of menstruation—pregnancy—fainting after bleeding—coldness of the extremities, and of the whole body—sweating—dissolved blood—an undue proportion of serum to crassamentum in the blood—the presence of petechiæ on the skin—the long duration of fever—tremors and slight convulsions in the limbs—the periods of pleurisy beyond the fifth or seventh days—appearances of being worse, after a first or second bleeding—the apprehension of bringing on a nervous, or the chronic state of fever—the debilitating effects of bleeding—the opinion that bleeding renders the habitual use of it necessary to health and life—the opinion that bleeding, more especially where it is copious, predisposes to effusions of serum in the lungs, chest, bowels, limbs, and brain—and, lastly, the persuasion that other evacuating remedies are more safe, and equally effectual in reducing the inflammatory state of fever.

These objections are all limited, explained, or combated, by Dr. Rush, with great force of argument and authority. He recites many cases, of an impressive kind, which strongly confirm his doctrine on this subject. We are sorry the extensive and detailed manner of his reasoning will not permit us to follow him.

Our author proceeds, in the next place, to examine, in detail, those evacuating remedies which have been proposed as substitutes for blood-letting. They are vomits—purges—sudorifics—salivation and blisters.

Although these remedies are admitted by the author, to be powerful and effectual in many cases of fever, he cannot allow

them to take place of blood-letting; and he justifies this opinion, by stating the uncertainty, inadequacy and slowness of their operation in urgent cases; that several of them are unsafe and inapplicable in many important instances; that they are not, like blood-letting, subject to the controul of a physician, but often operate more or less than was intended by him, or indicated by the disease.

Blood-letting, on the contrary, our author contends, possesses great advantages over every other mode of depleting, inasmuch as it abstracts one of the exciting causes, viz. the stimulus of the blood from the seat of fever—as it is quick in its operation, and may be accommodated to the rapidity of fever, when it manifests itself in apoplexy, palsy and syncope—as it is intirely under the command of the physician—as it may be performed with the least attendance of nurses or friends—as it disturbs the system much less than any of the other modes of depleting—as it is a more delicate remedy than most of the others—as it produces no immediate danger to life—as it is less weakening, when used to the necessary extent, than the same degrees of vomiting, purging, and sweating—and as it produces a more rapid and perfect convalescence.

But, by the use of blood-letting in fevers, we are not, Dr. Rush observes, precluded from the benefit of the other evacuating remedies. And there are cases, in which the combined or successive application of them all, is barely sufficient to save life.

Having replied to the principal objections to blood-letting, and stated its comparative advantages over other modes of depletion, the author next proceeds to mention the circumstances which should regulate the use of it. These are,

1. The state of the pulse.

The following states of the pulse indicate the necessity of bleeding—a full, frequent, and tense pulse, such as occurs in the pulmonary, rheumatic, gouty, phrenitic, and maniacal states of fever—a full, frequent, and jerking pulse, without tension, such as occurs in the vertiginous, paralytic, apoplectic, and hydropic states of fever—a small, frequent, but tense pulse, such as occurs in the chronic pulmonary and rheumatic states of fever—a tense and *quick* pulse, without much preternatural frequency, such as is common in the Yellow Fever—a slow but tense pulse, such as occurs in the apoplectic, hydrocephalic, and malignant states of fever, in which its strokes are from 60 to 90 in a minute—an uncommonly frequent pulse, without much tension, beating from 120 to 170 or 180 strokes in a minute, occurring likewise in the malignant states of fever—a soft pulse, without much frequency or fulness, to be found in affections of the brain, and in peripneumonia notha—an intermitting pulse—a depressed pulse—and an imperceptible pulse.—The slow, intermitting, depressed, and imperceptible states of the pulse may not only arise from congestion

in the brain, but from great excess of stimulus acting upon the heart and arteries. The slow, uncommonly frequent, intermitting, and imperceptible states of the pulse, which require bleeding, may be distinguished from the same states of the pulse, which arise from direct debility, or an exhausted state of the system, and that forbid bleeding, by the following marks:—They appear in the beginning of a fever—they occur in the paroxysms of fevers, which have remissions and exacerbations—they sometimes occur during the whole course of an inflammation of the stomach and bowels—and they occur in relapses, after the crisis of a fever.

The other states of the pulse indicate bleeding in every stage of fever, and in every condition of the system.

2. Regard should be had to the character of the reigning epidemic, in deciding upon blood-letting.

3. The constitution of the patient, and his habits of blood-letting, should be considered.

4. Respect should be had to the country or place from which the patient has lately arrived.

5. The appearance of the blood, after bleeding, should be attended to, in order to judge of the propriety of repeating it. The author then describes these appearances, and arranges them in the order in which they indicate different degrees of inflammatory diathesis, beginning with the highest. These are, 1. Dissolved blood. 2. Blood of a scarlet colour, without any separation into crassamentum or serum. 3. Blood in which part of the crassamentum is dissolved in the serum, forming a resemblance to the *lotura carnium*. 4. Crassamentum sinking to the bottom of a bowl in yellow serum. 5. Crassamentum floating in serum, at first turbid, afterwards becoming yellow and transparent by depositing certain red and fiery particles. 6. Sizy blood, or such as is covered with a buffy coat.—But it should be recollected, that all these appearances may be varied by the circumstances of blood-letting.

6. Blood-letting should always be copious, when there is danger from congestion or inflammation, in *vital* parts.

7. What quantity of blood, our author inquires, may be safely taken in an inflammatory fever? Supposing a person of ordinary size, to contain between 25 and 28 pounds of blood, and that much more blood may be taken in the febrile than in the healthy state of the blood-vessels, it is suggested that, perhaps, some cases of fever may be found in which four or five pounds of blood may be sufficient to keep up an equal and vigorous circulation. In confirmation of his opinions on this subject, Dr. Rush mentions a number of very striking cases of the quantity of blood which has been drawn by design, or lost by accident. He produces also some surprising instances of the rapid regeneration of blood, when drawn or lost.

In short, our author contends, that bleeding should be repeated, while the symptoms first requiring it continue, even until four-fifths of the blood in the body be drawn away. He adds, that in malignant fevers, he has always observed the cure to be most complete, and the convalescence most rapid, when bleeding has been continued until a *paleness* is induced in the face, and the patient is able to sit up without being fainty.

8. In bleeding, the quantity at each time should be large or small, according to the state of the system. Where the pulse acts with force and freedom, from 10 to 20 ounces may be taken at once; but in cases of great indirect debility, where the pulse is depressed, it will be better to take but a few ounces at a time, and to repeat it three or four times a day.

9. Arteriotomy would, probably, have many advantages over venesection, could it be performed at all times, with care and safety.

10. Our author supposes, that bleeding from the arm may supersede any other mode, in nearly all cases, except when local blood-letting may be necessary.

11. As to the proper time of bleeding, our author supposes it may be used at all times, when indicated by the pulse and other circumstances, in continual fevers; but it should be used chiefly in the paroxysms of such as intermit.

Dr. Rush concludes his defence of blood-letting, by some observations on its usefulness at the period when the menses cease to flow—in diminishing the pain and slowness of parturition—on the probability of its advantages, if used with sufficient energy, in cases of hydrophobia—on its beneficial effects in the reduction of dislocations, which resist the ordinary means—and its efficacy in preventing palsy, apoplexy, cough, colic, and some of the other diseases more particularly incidental to old age.

It would be doing great injustice to the author, to omit an acknowledgment of the distinguished merits of this last part of his work. He treats a subject of the highest practical concern, important, difficult, and interesting, from a variety of considerations; and, we must add, that, in our judgment, he treats it with perspicuity, precision, and great ability.

We conceive the author has perfectly succeeded in establishing the following positions—that blood-letting is a remedy of indispensible importance, in malignant and pestilential, as well as in many other kinds of fever—that much of the reasoning employed against it, is inconclusive and fallacious—and that, in the general treatment of fevers, it is not liable to produce effects so hazardous and detrimental as common opinion has usually imagined.

From this declaration, it will not be understood, that we are insensible of the mischief that may result from an indiscriminate and excessive employment of blood-letting, or from a hasty and mis-

taken application of the author's principles. If any remedy can be pronounced powerful, decisive, and irrevocable in the changes produced by it in the animal system, it is assuredly this. It would be fortunate for mankind, if a remedy of such extensive and frequent application, and of so much efficacy, could always be administered under the direction of a discrete and sound judgment. Every person must deprecate the pernicious mistakes, which ignorance, inexperience, and temerity may commit in this subject. And, if it had been possible for the author to subjoin restrictions and cautions still more clear and definite than those he delivers, we should have rejoiced to see them.

In addition to what we have more than once suggested in the course of this review, it will be proper here to offer a more explicit apology for the cursory notice we have been compelled, by the limits prescribed to us, to take of several important parts of this work. Many passages, containing reasonings of the greatest consequence to the author's opinion, admit neither analysis nor abridgment; and such passages we have often, unwillingly, been obliged to pass over. We hope we have not mistated the author's meaning in any instance; but if this should have happened, through inadvertence, we rely on his liberality to excuse it.

We take leave, with respect, of a performance, from the perusal of which we have derived so much instruction and pleasure; and shall be happy to renew our attention to the observations concerning gout, and the diseases of the mind, which the author promises to lay before the public at some future period.

ART. II. *Two Lectures on Combustion: supplementary to a Course of Lectures on Chemistry, read at Nassau-Hall; containing an Examination of Dr. Priestley's Considerations on the Doctrine of Phlogiston, and the Decomposition of Water.* By *John Maclean*, Professor of Mathematics and Natural Philosophy in the College of New-Jersey. Philadelphia. *Dobson.* 1797. 8vo. pp. 71.

THE performance before us affords another agreeable instance of the progress of chemical discussion in the United States. We feel much satisfaction in announcing to our readers each new proof of the growing taste in America, for this kind of inquiry. Professor Maclean appears to have meditated a reply to Dr. Priestley, before he knew that Mr. Adet was engaged in a similar undertaking; and that his examination of the subject might be as effectual as possible, he seems to have explained, to the students of Princeton College, in his lectures, part of the substance of the pamphlet under consideration, before he offered it to the public.

Mr. Maclean, in his answer, follows the arrangement of Dr. Priestley in his publication, with which, we presume, our readers are sufficiently acquainted, from the account given of it in the second number of this volume. From the examination of the first chapter of Dr. Priestley's work, on the Constitution of Metals, our author comes to the following conclusions: to wit. 1. That turbeth mineral may be reduced to running quicksilver, by heat alone, without addition. 2. That quicksilver, revived from its calces in inflammable air, does not differ at all from that recovered by increase of temperature only. 3. Though hot iron may so affect the air as to be smelled, this is no evidence of the separation of phlogiston from it. 4. Azotic air cannot be formed from the union of oxygene, with any matter which hot iron emits. 5. When iron is dissolved in the acid of brimstone, it is reduced to a state resembling that of the black oxyd. 6. That inflammable air and other combustible substances, are instrumental in reducing metallic oxyds by the attraction exerted for their oxygene. And, lastly, That the inflammable air, obtained from water and hot iron, and from iron and sulphuric acid, proceeds not from the iron, (nor, we may add, from the acid itself) but from the decomposition of the water.

Mr. Maclean next examines Dr. Priestley's second chapter, on the Composition and Decomposition of Water; and sums up his inferences, from examining the whole of the facts, under the following heads: 1. The same substance (oxyd of iron) is formed whether the iron is acted upon by hot steam, burned in oxygene air, or exposed, in the form of filings, to a sufficient heat in mixture with the red calx of quicksilver. 2. Where the iron is oxydated by the two latter processes, no hydrogene air is formed, though this is produced plentifully enough, when water comes in contact with hot iron. 3. The fixed air sometimes found after reducing metals in inflammable air, previously existed in their oxyds. 4. The water formed from the deflagration of oxygenous and inflammable airs, weighs just as much as the sum of the weights of the two gases. 5. The azotic air found in the residuary portion of the gases, was mixed with the airs before combustion. 6. The nitrous acid, when the combustion was rapid, proceeded from the union of azote with oxygene. 7. The experiments with barytes afford no evidence, that water enters into the constitution of permanently elastic fluids. 8. When water is acted upon by red-hot iron, it is resolved into its constituent parts, oxygenous and hydrogenous airs. And, 9. That on re-uniting the bases of these airs, there is a re-production of water.

The author then goes on to offer very proper and judicious solutions of the several objections contained in Dr. Priestley's third chapter, in the course of which, he gives his opponent credit for

his candour. He every where repels, with ability and skill, the attacks of the phlogistians; and shews himself well acquainted with the subject before him. The zeal he has shewn will be best understood from a perusal of the work itself: but the following extract, from the end of the second lecture, will give an idea of the confidence with which the professor recommends the antiphlogistic chemistry to his hearers:—"From the view which has been "given of the different explanations of the phenomena of com- "bustion, it appears that Becher's is incomplete; Stahl's, though "ingenious, is defective; the antiphlogistic is simple, consistent, "and sufficient; while Dr. Priestley's, resembling Stahl's but in "name, is complicated, contradictory, and inadequate. You, "doubtless, therefore, will be inclined to prefer the antiphlogistic "doctrine: Indeed, you may adopt it with safety; for, from being "a plain relation of facts, it is founded on no ideal principle, on "no creature of the imagination; it is propped by no vague sup- "position, by no random conjecture; it is dependent upon no- "thing whose existence cannot be actually demonstrated; whose "properties cannot be submitted to the most rigorous examina- "tion; and whose quantity cannot be determined by the tests of "weight and measure."

Upon the whole, while we express our opinion, that Professor Maclean has acquitted himself reputably in the present publication, and meritoriously supported the chemical character of the Seminary and State to which he belongs, we would advise our readers to beware, even at this time, of too much positiveness, while the experiments of Mrs. Fulhame and Mr. La Marc, now before the public, appear to require solution upon the antiphlogistic theory, and reconcilement with it.

ART. III. *Agricultural Experiments on Gypsum, or Plaister of Paris; with some Observations on the fertilizing Quality and Natural History of that Fossil.* By *George Logan*, M. D. Philadelphia. *Baileys.* 8vo. pp. 18. 1797.

IN this short pamphlet, Dr. Logan has related five experiments made by himself, on the operation of gypsum in agriculture, which, he thinks, establish the following facts. First, That there is no difference between European and American gypsum. Second, That gypsum acts as an immediate manure to grass, and afterwards in an equal degree to grain. Third, That one dressing will continue in force several succeeding crops. These experiments, which occupy eight pages of this publication, are the most valuable parts of its contents. The remarks on the natural history

of gypsum are superficial, and far less extensive and methodical, than may be seen in Cronstedt's Mineralogy, or almost any of the modern publications on chemistry. The same may be said of his observations on calcarious earth. They, however, are well calculated to impress the minds of those readers who love conciseness, and to whom, general ideas, conveyed in common language, are more welcome and more intelligible, than profound scientific details expressed in technical terms. And, on the whole, we consider, that every cultivator, and especially such as employ gypsum, may peruse this piece with advantage.

ART IV. *Agricultural Inquiries on Plaister of Paris. Also Facts, Observations, and Conjectures on that Substance, when applied as a Manure, &c.* By *Richard Peters.* Philadelphia. *Cist and Markland.* 8vo. pp. 111. 1797.

WITH great pleasure we announce this small publication, which is intended, as the author modestly says, "to invite "as well as to give information," and which is collected chiefly from the practice of farmers in Pennsylvania. The subject of manures appears, as yet, to be in need of much further elucidation than it has hitherto received; and on scarcely any article of the whole tribe of fertilizing substances, is a rational theory more wanted, than in the case of gypsum. Mr. Peters has proceeded in the proper way to come to a right understanding of his subject, by laboriously and patiently collecting, not only the facts which fell under his own eye, but those which occurred to the intelligent farmers of the country around him.

The mode adopted to collect information was by a circular letter, containing about a dozen queries. To these queries, answers have been returned by Messrs. West, Frazer, Price, Hand, Curwen, Sellers, Duffield, Wharton, Roberts, Heckewelder, and by Mr. Peters himself. So that the materials collected are to be considered as the result of the agricultural experience of these respectable cultivators. They all agree in the vast utility of gypsum as a manure in most parts of Pennsylvania, where it has been tried. It seems to be agreed on, that after ten or eleven years use, the gentlemen still entertain their good opinion of it; that it remarkably brings to exhausted and impoverished soils; that one bushel and a half, or two bushels, will be sufficient, if yearly repeated, for clover; that it will answer well in a sandy loam, upon a lime-stone bottom; that though it is serviceable when strewed in powder, on growing plants, it succeeds best in repetition, after cultivating and dressing slightly with stable manure, or with

ploughing in green manures. As to the supposed sterility occasioned by gypsum, Mr. Peters observes, that his own experience teaches him it does not exhaust more than other manures do, particularly dung, and that to produce its full effect, it must have something to feed on, as some farmers express it; that is, as we suppose, to be valuable and active, gypsum must meet with something in the soil to decompound it; and where this is wanting, the plaister of Paris does no good. When strewed on the surface, it most remarkably benefits white and red clover and most grasses; though it did not appear to do any good to winter grain. It is good for all leguminous plants, buck-wheat, flax, hemp, rape, and oily-seeded plants; most products of the kitchen-garden, and for fruit-trees; as well as for oats and barley, when sprinkled at sowing time on the wetted seeds. Mr. Peters has sowed gypsum at all times of the year, and has found it answer well, if strewed over the land at any time from the beginning of February to the middle of April; and he directs it to be sowed in misty weather, to avoid the loss of having it blown away with the winds, if sown in a dry time. Some do not sow it until vegetation begins, though our author thinks it will have an effect, if sowed at any season. As to the quantity of produce by the acre, Mr. Peters affirms, he gets as much from gypsum as from any other manure; that the hay is better than that produced by dung; that the cattle waste less of it; and if the grass is used for pasture, the creatures are much more fond of the *plaistered* than of the *dunged* produce. He is satisfied with a ton and a half the acre, at a cutting; he mows twice, and has a third growth for grazing afterwards. Its durability is such, that though sometimes it will be exhausted in one year, yet the effect of one dressing, of three or four bushels to the acre, has been felt for five or six years, gradually decreasing in its powers, and seems to be capable of prolonging the efficacy of dung; and has been known to do good, when sowed repeatedly, and in small quantities, for a continuance of twelve years and more. The author expresses himself with much propriety, on the pernicious increase of weeds, through the neglect of husbandmen, and thinks the French gypsum preferable, for agricultural purposes, to that brought from Nova-Scotia. We believe with him, that there is a great variety in the gypsums, and are of opinion, that in order to make the whole subject well understood, there should be a set of correct and well-conducted experiments, on the actual composition and relative properties of the several sorts of plaister. But who that can be relied on will undertake this inquiry?

In Mr. Peters' chapter of miscellaneous observations, we find many judicious and excellent practical remarks, and towards the close of the performance, some attempts to generalize the nume-

rous facts he is possessed of, into something of theory. If he has not, however, ventured boldly upon this, he has prompted another cultivator (Dr. Mitchill) to undertake it in a memoir intended as a sequel to Judge Peters' pamphlet, and which may be seen in the first number of our Medical Repository, p. 30, where this matter is amply discussed. To this we refer our readers.

We cannot dismiss this work, without expressing our high approbation of the care and candour which the author has shewn. It should be an example as well as an incentive to other collectors of facts. And if we do not go deeper into the detail of the contents of this valuable publication, it is that we may induce our readers to peruse the work itself.

ART. V. *An Inaugural Dissertation on the Bilious Malignant Fever, read at a public Examination in the University of Cambridge, for the Degree of M. B. July* 10, 1797. By *Samuel Brown*, A. M. Boston. *Manning and Loring.* 8vo. pp. 54. 1797.

THE town of Boston, like most other sea-ports and places in the United States, where men croud together, and make the same spot for a long time the place of their settled residence, generation after generation, has experienced something of the pestilence. In the year 1796, particularly, the distemper was more than usually alarming, and both on account of the violence of its attacks, and the numbers it invaded, became a subject of very serious consideration. Mr. Brown has undertaken to describe the forerunners and symptoms of this malady, as well as to investigate its cause, prognosis, cure, and prophylaxis.

He observes, that the scarlatina, scarlatina anginosa, measles, dysentery, and cholera morbus, were the diseases which successively prevailed, and some of them with unusual mortality, until the month of August, when the more powerful influence of the endemic he describes, converted them all to its own form and nature. This remark, we consider a valuable one, as it evinces the connection of all the diseases known by those names, with one common cause.

Mr. Brown then makes a digression upon poisons, which he divides into animal, vegetable, and mineral. Animal poisons are *natural* secretions, like the venom of the viper, &c. or *morbid*, like syphilitic virus, &c. These are communicated either in the state of gas, through the atmosphere, as in fevers, or in a liquid form, by contact, as in lues. They operate as stimuli upon the excitability, or sensorial power of the constitution, and can produce therein but *one action at a time;* and *when the constitution has expe-*

rienced this action, it becomes no longer susceptible of it afterwards. We would here request Mr. Brown to consider, that we have seen recently a case, where the human constitution was under the operation of mercurial salivation, intermittent fever, and syphilitic contagion, all at once; and we beg him to remember, that though re-infections in plague, yellow fever, &c. are not very common, yet there are now and then instances of their occurrence.

The same hasty spirit of decision, with which the author made the preceding unqualified assertion, leads him next to observe, that poisons, measles, and morbific effluvia, are of too subtle a nature for chemical analysis, and that their constituent materials are utterly unknown. That they may be unknown to him we shall not presume to deny; but that the composition of many poisonous substances is very well understood, we have no doubt. Are not the various combinations of quicksilver, lead, copper, and arsenic, with oxygene and acids, very well understood? Do we not comprehend the constitution of carbonic acid gas? And are not the various animal exhalations composed of azote, charged with various degrees of oxygene, well understood, both synthetically and analytically? How then can the author affirm, we know nothing about them? It is true, the precise constitution of a number of them is as yet unknown, but it by no means appears, that their nature is too subtile to be detected. On the other hand, Dr. Mitchill's ideas, now corroborated by the very recent experiments of Mr. Eaglefield Smith, shew, at least, the probability of the greater part of them having septon (azote) for their basis.

Mr. Brown seems half inclined towards an animalcular hypothesis of poisons. We have heard of an animalcular hypothesis of fire and of electricity. And there has been an animalcular account of dysentery, and of epidemic fevers. It would be quite as easy to make an animalcular hypothesis of light, attraction, or any thing else.

There is another unqualified general remark of our author, which deserves animadversion, "that the more simple and homo-"genous a substance is, the more powerful and active it is;" this, he says, is an universal truth. Is this the case with carbone, sulphur, or hydrogene? Are acids simple bodies? And is it to their simplicity and homogeneiety, these powerful substances owe their activity? Are quicksilver or arsenic active in proportion to their simplicity? or do they acquire their stimulant and other remarkable qualities, by being *compounded* with oxygene and acids? But of this enough. Mr. Brown goes on with the history of the symptoms, in pretty much the common form, except "that there "was found in many instances, a *porraceous* (green as leeks) sub-"stance, resembling the settlings of coffee." He next delivers his prognosis, and enters upon the rationale of the proximate cause.

This he makes to be a portion of the (unknown) morbid effluvium swallowed with the saliva, and stirring up various disorders in the alimentary canal, and inducing irregular and morbid action in the abdominal and thoracic viscera. He says, the "life of "the blood is either greatly impaired or totally destroyed;" and thence proceeds to discuss the questions, whether the blood is alive and organized or not? what is life? and wherein life resembles soul? whence soul is derived? &c. In doing which, after quoting Fothergill, Darwin, Cullen, and Hunter, he seems to us, to adopt the metaphysical notions of Swedenborg, and to be tinctured by sentiments imbibed from his doctrine of influx. We remember when we looked into this performance of the apostle of Sweden, we did not well comprehend it; nor do we better understand the application of his opinions, by his disciple, to explain the physiology and pathology of human bodies. Mr. Brown, however, with great propriety, calls the alimentary canal "the store-house of contagion." In his chapter of predisposing causes, Mr. Brown makes judicious remarks; and his method of cure consists in lowering the excitement by depletion, even by blood-letting, with all possible speed. He commends jalap and calomel very highly as a cathartic composition, in the dose of twenty-five grains of the former to ten of the latter. After the effectual operation of which, by producing four or five discharges, other purgatives, such as the sulphate of soda, tartrite of pot-ash, rhubarb, senna, manna, &c. are recommended.

The author further advises the whole body to be cooled, by cloths dipped in cold vinegar and water; and the like applications to be made to the head, neck, and back, when these are distressed with pain. He recommends plentiful dilution, by watery subacid and small drinks; and forbids the use of food until after the crisis. He directs particular attention to every kind of cleanliness and ventilation. If, notwithstanding all these things, the excitement should not be seasonably abated, but run into indirect debility of the typhoid or malignant kind, he advises the tonic and stimulant plan to be pursued, but cautions against the use of the diffusible stimuli, which may exhaust the remaining powers of the constitution. A few cases from Dr. Warren's practice, chiefly unsuccessful, and some preventative directions, conclude this dissertation.

As a sequel to it, Mr. Brown has ventured to criticise some of Professor Mitchill's opinions concerning the operation of septic or pestilential fluids upon the human body. In this part of his dissertation, Mr. Brown does not appear to us to have perfectly comprehended the system he attempts to refute. This will more clearly be seen, by a cursory examination of several queries and objections which successively occur.

Mr. B. asks, why Dr. M. rejects the idea of *putrid ferments* in the mass of fluids?—To this it may be replied, that putrid water, putrid air, &c. being all highly antiseptic, there is no evidence of the existence of any putrid ferment. Mr. B. inquires, why not call those diseases which are so suddenly destructive of life, *putrid*? Answer—because putridity is incompatible with life, and consequently does not invade the body until after life ceases to influence it.—Why say that septon is antiseptic?—We believe that Mr. B. will be difficulted to discover any such assertion in Dr. M.'s publications. A more diligent examination will probably shew the following statement of Dr. M.'s doctrine concerning azote, or septon, (as the Dr. calls it) to be accurate, viz.—That septon, when existing in too great quantity in the animal nerves and muscles, does, by its redundancy or surplusage, give those living parts a looser texture or cohesion, and a tendency to be disorganized or disconnected, as in scurvy and in scorbutic fevers, bordering on or approaching to the malignant and pestilential forms, but that, as soon as septon is chemically combined with oxygene, it possesses the properties common to acids and the things vulgarly termed antiseptics.—Mr. B. thinks every change in the mass of fluids must be putrefactive: Dr. M. on the contrary, maintains that the fluids in the blood-vessels may be changed in an indefinite number of ways, without being in a putrid state at all; nor will Mr. B. probably hesitate to adopt the same sentiment, after a more leisurely and extensive survey of the facts which relate to the various states of that fluid.—The author suspects that Dr. M. has been led to adopt his opinion from *appearances*. This is undoubtedly the fact: and Dr. M. and every other physician would be very much to blame if he made up his opinion in any other way: for what are the whole of the *phenomena* of nature but *appearances*? and what is the business of the man of science but to interpret them?

ART. VI. *An Inaugural Dissertation on Camphor.* By *John Church*, A. M. Philadelphia. *Thompson.* 8vo. pp. 70. 1797.

FEW articles of the Materia Medica have given rise to more diversity of opinion, or to greater contrariety of pretended facts than Camphor. To mention these particularly would be to implicate some venerated names in censure, and to exhibit such an uncertain and conjectural aspect of our art, as would neither be honourable to medicine, nor to medical writers.

In prosecuting the natural history of Camphor, Mr. Church delivers the botanical description of the Laurus Camphora, the tree

from whence it is generally obtained; the places where it usually grows; a catalogue of plants which yield smaller quantities of the same substance; the different modes of procuring and manufacturing it; and the changes produced in it by some of the most noted agents of chemistry.

In order to take a more comprehensive survey of the operation of Camphor on the principles of organic life, our author instituted a series of experiments to ascertain its effects on the growth and economy of vegetables. From these experiments it appeared that, generally, vegetables thrive more in water impregnated with Camphor, than in simple water. This result, however, was not uniform; for some died much sooner in the camphorated, than in the pure water. And this variety is ascribed by our author to the violent impression of this stimulus on the irritable system of some plants, inducing indirect debility in such degree as to terminate in death.

The experiments on plants are followed by an account of the effects of Camphor on the human body. Applied to any part of the body, where the cuticle has been removed, to the eye, or to the internal membrane of the nose, it induces a sense of heat, with redness and pain. After these have subsided, the irritability of the parts is diminished.

When taken into the stomach, Camphor is found to produce the following effects. The pulsation of the heart and arteries is rendered quicker, more frequent, strong, tense and full; then, after a little time, it becomes slower. With the increased frequency of the pulse, there is an augmentation of heat, flushings in the face, &c. Respiration is little affected, when the dose has been moderate; but when very large doses have been given to animals, the breathing becomes difficult, slow, and laborious.

The stomach is rendered incapable of digestion from the operation of a large dose of Camphor; anorexia, nausea, and sometimes vomiting take place. In the intestines, it sometimes produces cathartic effects. The secretions and excretions are generally increased, particularly those of perspiration and urine.

The mind is affected by Camphor in the same manner as by other diffusible stimulants; it is first excited to cheerfulness and gaiety; then, if the dose be larger, comes on the delirium of intoxication, followed by languor, drowsiness and disinclination to motion. These several effects of the internal use of this substance are supposed, by our author, to be clearly deducible from the numerous experiments which he details in the dissertation before us.

Mr. Church relates a singular and curious case of a woman, who, from the casual application of Camphor, as a remedy for tooth-ach, contracted a fondness for it so fascinating and irresistible, that she, at length, consumed it in large quantities; and could not be induced to relinquish it, by all the remonstrances of her

friends, or her own conviction of its pernicious effects. The avidity with which stimulants are taken, the inclination of mankind to abuse them, and the readiness of the palate to sacrifice its most decided aversions to their domineering influence, are strongly illustrated by this case. To persuade men to abandon indulgencies of this kind, is a hopeless task. If ardent liquors should cease to be the bane of the Christian, and opium of the Mahometan world, the extensive class of stimulants would still afford a multitude of substitutes, equally alluring and fatal, as those far-famed destroyers of the human race.

We feel great pleasure in paying our tribute of acknowledgement and respect to the author of this dissertation. Not contented implicitly to admit the opinions of some very distinguished physicians, Mr. Church has inquired for himself, and thereby been enabled to detect their mistakes, and refute their reasoning. His experiments are ingeniously devised; the mode of conducting them appears to be marked with diligence and precision, and most of his inferences are legitimate and conclusive.

ART. VII. *A Chemico-Medical Essay, to explain the Operation of Oxygene, or the Base of Vital Air, on the human Body.* By *Benjamin De Witt.* Philadelphia. *Woodward.* 8vo. pp. 35. 1797.

THE doctrines concerning the operation of factitious airs on the human body, are now become so important, as to attract much attention and interest in every country where medicine is liberally cultivated. Although still very imperfect, this subject discloses a prospect so expanded and fruitful, in respect both to speculation and practical utility, that the most cursory and dispassionate observer cannot behold it without feeling some portion of the enthusiasm, which such a scene is calculated to inspire. In the hope of possessing these more simple and energetic remedies, the Materia Medica may be expected, without regret, to part with a huge mass of ambiguous and inert articles, which have overwhelmed it for ages. And the animal constitution, analized to its first principles, will lead physicians to employ means of securing health, and treating diseases more, conformable to truth and nature.

In the essay before us, Mr. De Witt, after stating, in perspicuous terms, the common doctrine of the composition of the atmosphere, proceeds to deliver the history of oxygene. As this substance, on account of its great attraction for other bodies, has never been obtained in a separate state, he chiefly treats of it as combined with caloric, which maintains it in the form of elastic fluidity; and,

in this state, he considers it as employed in the respiration of animals, in the combustion of inflammable, and the putrefaction of animal and vegetable substances.

The agency of oxygene, in the functions of the lungs, forms one of the most interesting objects of physiological inquiry. The mode of its introduction by that organ, is particularly described by our author. He also supposes, on the ground of many facts, as well as the opinion of several respectable writers, that large quantities of oxygene are absorbed by the stomach and intestines, and also by the skin.

That the difference in the colour of venous and arterial blood is wholly to be ascribed to the operation of oxygene, our author hesitates not to conclude. In attempting to explain this appearance, he thinks it most probably owing to iron, reduced to the state of red oxyd. He admits, however, the difficulty of explaining how so small a portion of iron as the blood contains, should diffuse that florid colour through so large a mass of fluid; and he does not believe, that iron has so strong an attraction for oxygene, at the ordinary temperature of the body, as to account satisfactorily for the instantaneous change which takes place in the blood circulating through the lungs. The coagulability of the coagulable lymph, he refers, agreeably to the result of Dr. Beddoes's experiments, to the operation of oxygene.

The author proceeds to consider the influence of oxygene, in producing animal heat, as a stimulus essential to the action of the heart and arteries, its agency upon the nerves, brain and mind, and particularly as affording the material for the secretion of the vital principle by the brain, or medullary part of the nerves, its use as a nutriment, and its effects on the fœtus in utero.

In treating of the morbid effects of oxygene, the author adverts to the opinion of Dr. Beddoes, concerning a superabundance of it in phthisical patients—to the conjecture of Dr. Rush, that an excess of it in the atmosphere may dispose to epidemic and malignant diseases—to the doctrine, maintained by Dr. Mitchill, of the noxious effects of certain combinations of oxygene and azote—and to the observations of Dr. Darwin, concerning the corrosive and fever-producing qualities imparted by the oxygenous portion of the atmosphere to the matter of cancer, abscess, small-pox, &c.

As a remedy in certain diseases, we may expect much from oxygene. It exhibits all the characters of a powerful and durable stimulus. Great benefit, our author observes, has been experienced from it in asphyxia, arising from different causes, in scurvy, typhus, asthma, cancer, schrophula, herpes, hypochondriasis, chlorosis, dyspepsia, melancholia, &c. The prospect of obtaining an adequate remedy for these destructive disorders, some of which are the reproach of medicine, and more especially a remedy of such

easy and agreeable application, will be consoling to every friend of mankind. The important practical question, whether oxygene, like other stimulants, exhausts excitability, is left, in a great measure, untouched by our author.

On the several points comprehended in this essay, Mr. De Witt has derived his information from the most authentic and respectable sources. He has, indeed, neither made, nor proposed any new experiments; he has not inriched the common doctrines by any novel assemblage of facts; nor do we perceive any thing in his combinations or reasoning that can be pronounced original. He possesses, however, the merit of having selected an interesting topic; of presenting the matter, collected from various sources, in a lucid and natural order; and of contributing his exertions to disseminate the knowledge of a subject far too little regarded or understood in the United States.

ART. VIII. *An Inaugural Dissertation on Fractures, &c.* By *Robert Black, &c.* Philadelphia. *Ormrod and Conrad.* 8vo. pp. 46. 1797.

IT is pleasing to observe the improvements which are making, in our country, in every department of the extensive science of medicine. Surgery and Chemistry, in particular, which have languished, till very lately, in a state of barbarous neglect;—the last confined to a few of the simplest processes of Pharmacy, and the first to the treatment of the commonest injuries, and oftentimes but partially successful even in them;—are now ready to assume their proper rank among the subjects of medical curiosity and attention; and by their more sedulous and enlightened cultivation, promise to diffuse extensively the blessings of health and comfort.

In the essay before us, we observe multiplied proofs of vigorous application to that branch of the healing art which seems principally to attract the author's regard. The praise of novelty and ingenuity certainly belong to it. We wish it were in our power to commend the prudence and judgment of the writer with equal freedom. But we have found reason to dissent from several of his opinions, which we shall examine with the less reserve, as we have no doubt, that future experience will forcibly compel his relinquishment of them, and dispose him, while he adopts a more cautious line of procedure, to think favourably of the liberty now exercised in respect to him.

The observations of Mr. Black upon the causes which most frequently produce fractures, appear to be well founded. There can be no doubt that muscular action has a great agency in their

production, and, in particular, fractures of the patella happen, we believe, nine times out of ten, from muscular exertion alone.

From the consideration of the causes of fractures, Mr. Black proceeds to lay down rules for the treatment, and to examine that which has heretofore been proposed by others; and he observes, that "Mr. Pott has magnified the *bent position* in fractures into an "improvement of more general utility than experience would "seem to warrant." It is not uncommon in the proposer of any improvement, or fancied improvement, to carry matters to an extreme; and we fear that our author has been led inadvertently into the same error. It may be acknowledged, that cases do sometimes occur, in which the *straight position*, so universally recommended by Mr. Black, may have advantages over the bent one; but, in general, we are persuaded, that the bent position will not only allow us more easily to effect a reduction of the fracture, and to retain the bones in accurate coaptation, but will also be attended with fewer untoward symptoms. Nor do we by any means admit the impracticability, in the bent position, of using the sound limb as a criterion to determine whether the parts are completely replaced. Supposing the leg fractured, and placed according to Mr. Pott's direction, can there be any difficulty in bringing the well leg parallel to, and in contact with it, to ascertain whether it is of a proper length? But this objection to the bent position is of very little consequence, because the necessity of having recourse to this criterion very rarely occurs. In fractures of the leg, the deformity is easily detected. As long as it exists, we may be certain, that the limb is not duly adjusted; and, as soon as it is made to disappear, we may be satisfied that the bones are in their proper place.

Mr. Black very justly observes, (p. 22.) that "the action of "muscles forms the great obstacle to the reduction of fractures." But, if this be true, does it not follow of necessity, that the more we relax the muscles, the *less* will be the difficulty attending the reduction? And, is it not in the bent position that the greatest number of muscles are in a relaxed state? The premises of the author seem to lead directly to a conclusion, subversive of his own doctrine. It is upon the same general principle, that bones are, with less difficulty, *retained* in a state of coaptation in the bent position, than when the limb is straight. For the simple extension of a muscle is a powerful stimulus to its contractile power; and the muscles being considerably stretched, in the extended posture of the limb, they are, in consequence, constantly endeavouring to displace the fractured bones.

But let us dismiss reasoning for a moment, and attend to facts.

It very frequently happens, that when a fracture takes place, the patient himself, or those who may chance to be immediately

present, dispose the broken limb in a straight position. When the surgeon arrives, he finds his patient complaining much of pain, and the bones deranged. He immediately attempts to reduce the fracture; but his efforts are unavailing, and he increases the pain, without effecting the reduction. The surgeon, then, we will suppose, places the limb in the bent position. The first effect of this change of posture is an alleviation of the patient's suffering; and the next advantage is, that but little, if any, difficulty remains in the way of making such extension as is necessary to coaptate the bones. And this, which is a common case, is direct evidence of the superiority of the bent over the straight position; and may be opposed to those instances recited by Mr. Black, in which the patients were more easily managed by a contrary method. The only question to determine is, which mode of treatment has been attended with the greatest success; and on this point, we have no hesitation in asserting that the great weight of evidence would be in favour of the bent position.

In respect to the posture of the body, it may be easily admitted, that that which is the most natural and easy is the best. But is a horizontal position on the back, more natural than lying on the side? Do people most generally lie extended on their backs, when they sleep? If the natural position is that which is most frequently observed, we cannot help thinking, that lying on the side is quite as natural as lying on the back. But it is futile to contend about the *natural* position, when, in fact, there is no such thing. Every position is fatiguing when long continued; and we are constantly changing to obtain ease. When, therefore, it is declared by the author, (p. 14.) that he "never saw a patient put "on his side, with a broken leg, who did not, in a few hours, "turn on his back, in spite of every effort to obey the injunctions "of his surgeon;" we may fairly conclude either that the patients were not placed properly on their side, or that the observations of the author have been extremely limited. For no surgeon, whose opportunities for observation have been ordinarily frequent, can have failed of seeing many cases, where patients remained upon the side without difficulty. It were certainly very remarkable, if so much difficulty, as Mr. Black supposes, did actually exist, that it should not have occurred more forcibly to the view of the principal modern writers on surgery; nor is it credible, that Mr. Pott himself, with every allowance for prejudices in favour of his own treatment, should not, in this case, have been struck by its so frequent recurrence. But, admitting that patients are inclined to turn on the back, they do this only to a certain degree; and it is obvious, that in this position of the trunk, the leg and thigh may be bended, so as to give the full effect of a relaxed state of the muscles, and enable the fractured bones to be kept with ease in

their proper situation: and there is this further advantage in this posture of the limb, that it enables the patient to enjoy the relief of changing occasionally the position of the body from the side to the back, and the contrary.—The unqualified assertion of our author, that the grand object for which a surgeon is employed would be defeated if the patient were confined to lie on his side, argues but little experience on his part, and too little attention to the experience of others: and, so far from being a *lucky hit*, it is the common result of every day's practice, with judicious surgeons, to preserve the leg straight, after a fracture has been treated in the bent position.—We admit the tendency of the large extensor muscles of the foot to pull the broken ends of the bones past each other. But this is, most indubitably, a reason for preferring the bent position; because the disposition of the gastrocnemii to contract is always great in proportion as they are stretched; and it is the straight position which has this effect: whereas, by bending the leg upon the thigh, those muscles are relaxed, and, of course, placed in a condition little disposed for action. Mr. B. observes, that the straight position affords a complete antagonist to the gastrocnemii. But it should be a chief object with the surgeon to place the limb under circumstances not to require the action of antagonizing powers; and we apprehend the limb to be placed under those circumstances when it is bent and properly supported. Or should any means be necessary to counteract the extensor muscles, they are easily found in a splint extended from the ham to the heel, and a little below it, *and not by the application of splints to the fore part of the leg*. It certainly was fortunate for our author that he had seen so little advantage derived from splints applied to the fore part of the leg; and he saw all that could reasonably be expected. But he has cautiously avoided mentioning a splint in the opposite situation, because here it must obviously have the same effect as placing the leg upon the heel; for it is the same thing, whether we carry the leg to the support, or bring the support to the leg.—The objection to splints, because, through negligence of the surgeon, in not guarding them sufficiently with tow, or some soft materials, they sometimes produce sores upon the ancle, scarcely deserves a consideration; for it is only from neglect that they are ever productive of this mischief.

In fractures of the patella, our author observes, that "the "straight posture alone is admissible." But he is less fortunate here in his opinion than on the occasions we have already noticed; for experience teaches us, that the *bent* position alone is admissible in fractures of the patella. But we must be understood to mean, that *it is bending the thigh on the trunk* which is particularly required in treating a fracture of this bone. Mr. B. remarks, that "the "action of the extensor muscles of the leg renders it almost im-

"possible to keep the fractured pieces in contact;" and when the treatment is conducted in the straight position, we know this to be the case. But we also know, that, in the bent position, it is generally an extreme easy matter to put and keep the broken pieces of bone in complete apposition. The source of error, among surgeons, when they are laying down rules for the management of these fractures, has been in their not considering the extent of the muscles which are concerned. If all the extensor muscles had originated from the thigh bone, and gone to the leg in the way in which they in fact now do, to have extended the leg upon the thigh would have been doing all that was in the power of art, as far as it regards position. But there is one of the extensor muscles, and by much the most powerful too, as it respects the patella, which has its origin from the pelvis, and at a considerable distance from the center of motion of the hip joint. From this circumstance it is, that the bent position is so necessary; because it is by flexing the thigh alone, in fractures of the patella, that we relax the extensor muscles of the leg, which is the thing required, in order to enable us to bring down and retain the superior portion of fractured bone, in contact with the inferior. To extend the leg upon the thigh is useful, inasmuch as it raises the inferior portion of bone; but it does nothing more. In the sound state of the limb, straightening the leg has a considerable effect in relaxing the extensor muscles; but even in this state, the flexion of the thigh has that effect in a much greater degree. When the thigh is much bent upon the trunk, to extend the leg completely is sometimes productive of uneasiness in the course of the flexor muscles of the leg, which may require it to be kept a little bent upon the thigh: and this may be allowed of, without materially affecting the broken bone; because the insertion of the ligament of the patella is so much nearer the center of motion than the tendons of the flexor muscles, that a small flexion of the leg will produce scarcely a sensible depression of the former, while it procures perfect ease to the latter.

From these observations, it necessarily results, that the *bent position* is to be preferred in transverse fractures of the patella; and were it necessary, a number of cases might be subjoined, which, under this treatment, were attended with the most perfect success—the patients having as entire an use of the limb after as before the accident.

The length at which we have examined the first part of Mr. Black's dissertation, unavoidably obliges us to pass over a number of points of inferior consequence, and to hasten to the consideration of his second leading doctrine. And here, for the same reason, we shall confine ourselves to a few cursory remarks; pretty much in the order of the author.

A very large portion of the Essay under review, is devoted to the strenuous recommendation of blood-letting, in the various kinds and stages of fractures. The author even urges recourse to this remedy, in every case where difficulty is found in effecting a reduction. Of the efficacy of venæsection, and of the propriety of employing it more extensively than is commonly practised, not only in accidents of the kind now considered, but in numerous other morbid situations of the human body, we have no doubt; that it may be advantageously resorted to in fractures and luxations of some duration, seems as little questionable; but as a general practice, and for the *mere purpose of inducing relaxation*, we cannot so heartily concur with Mr. Black in recommending it. This gentleman's enthusiasm for a favourite remedy, certainly carries him too far, when it leads him to suppose it so singularly useful, in cases where bones are protruded through the integuments; since a simple incision will generally afford sufficient room for their reduction, at the same time that it disposes the lacerated integuments more readily to heal. But, if this were not the fact, where is the *cruelty* of removing a piece of bone? an operation which excites little or no pain, and which seldom fails of answering the purpose of the operator.

In the subsequent recommendations of the lancet, for the removal or prevention of inflammation; and to prevent mortification from whatever cause, we see little room for exception. A longer and independent exercise of his profession will, no doubt, temper the author's personal zeal; which will produce no improper effect on the minds of those who have already been some time engaged in it. On those who prescribe bark and wine, in cases of recent fracture, if such persons are not the offspring of the author's own imagination, we fear it will have little influence of any kind.

With regard to that convulsive action of the muscles, in consequence of fractures, which Mr. Black enumerates, as among the events which demand the freest use of the lancet, it may be remarked, that though instances of this nature may and do occur, in which bleeding will be serviceable and is indispensible; yet it is equally certain, that cases of this kind may and do happen, in which no prudent surgeon would advise it. What is true of every other remedy is true of this, that the peculiar circumstances of each case must determine the propriety or impropriety of its use, and to what degree. But, were it true, that bleeding would remove symptoms like these, in every instance, still this would not be a sufficient reason for its exclusive application. It must first be proved, that it is the most certain, safe, speedy, and pleasant remedy. And how has it happened that Mr. Black has so intirely overlooked an article of the Materia Medica, so universally com-

mended, for the removal of spasmodic affections, as opium?* Is he ignorant, that this alone is often sufficient to obviate them completely? That it proceeds still more certainly, in plethoric persons, after moderate bleeding? And if *he* should entertain any doubts on this point, will any intelligent and experienced practitioner hesitate to believe, that in the case recited by the author, (p. 29.) a suitable dose of opium, repeated at proper intervals, and preceded by one or two small bleedings, would have succeeded in vanquishing the convulsive motions, in much less time, and with much less hazard to the patient, than the method actually adopted?

We shall here take our leave of this Essay. Most of the remaining sentiments and directions are correct and proper. Some, it is true, are open to animadversion. But, though we have differed so freely and materially from the author, relative to several of the most essential doctrines which he has delivered, yet we cannot conclude without expressing our warm approbation of the spirit with which he has asserted his opinions, and our sanguine expectations of his future usefulness and distinction.

* In a late work (Townsend's *Guide to Health*, Vol. II.) we even find Opium recommended for another purpose, for which our author so much insists on the use of bleeding.

"Mr. Ginesta, professor of the College of Surgery at Madrid," says Mr. Townsend, "has happily discovered, that opium, internally taken, and externally applied, in strong fomentations, to the contracted muscles, induces "such a degree of relaxation, as greatly facilitates reduction. In a memoir, "presented to the infant College, and which will be published, he mentions "several cases of long standing, restored in this way by him, after having "wearied the patience and frustrated the hopes of other practitioners."— And, a few years ago, a late practitioner of medicine in this city, proposed, on the credit of his own experience, to effect the same purpose, by Emetics, given till their operation produced universal relaxation.

MEDICAL FACTS, HINTS, AND INQUIRIES.

Facts relative to that Faculty of Animals which has been called INSTINCT.

1. *The following facts respecting a* WREN, (Motacilla Domestica Linn.) *were communicated to me by Mr. Julius Deming, a respectable merchant of Lichfield, Connecticut; who received them directly from the lady originally observing them.*

IN the spring of 1790 or 1791, the sister-in-law of this gentleman observed a wren attack the martens in a box prepared for them, and affixed to her father's house. After a short time they were driven from it, and the wren took possession, and began to construct her nest. Unwilling to lose the martens, and to injure the wren, the lady made use of this expedient. She placed a wooden box (of about the size of a gallon bottle), with a moveable cover, in which was a small hole, in the adjoining bee-house. Within an hour after this had been done, the wren deserted the marten-box, for that which was intended for her, where she built her nest, layed her eggs, hatched, and reared her young.

While the wren was laying, during the time of incubation, and after the birth of the young, the box in which the nest was formed, was often removed into the house; whither the parent-bird always followed, without exhibiting any particular marks of fear: at least, whatever apprehension she might have had originally, was wholly subdued by the frequent repetition of this practice.

When the young were pretty well grown, it was very interesting to observe the mother instruct them in her peculiar song. As this process was thought curious and singular, it attracted the attention of others beside the lady first mentioned; and all the circumstances were often observed by her friends, as well as herself, at their leisure, in her father's house.

The mother-bird fixed herself on one side of the opening in the box, directly before her young. She began by singing over her whole song, (which is known to consist of a considerable number and variety of notes), very distinctly. One of the young then attempted to imitate her. After proceeding through a few notes, his voice broke, and he lost the tune. The mother immedi-

ately recommenced where he had failed, and went very distinctly through with the remainder. The young bird made a second attempt, commencing where he had ceased before, and continued the song as long as he was able; and when he lost the note again, the mother began anew, where he stopped, and completed it. Then he resumed the tune, and finished it. This done, the mother sang over the whole series of notes a second time, with great precision; and a second of the young attempted to follow her. With him, she pursued the same course as with the first; and so with the third and fourth. It sometimes happened, that the young would lose the tune, three, four, or more times, in the same attempt. In which case, the mother uniformly began where they ceased, and sang the remaining notes; and when each had completed his trial, she repeated the whole strain.

Sometimes two of the young commenced together. The mother observed the same conduct towards them, as when one sang alone. This lesson was repeated, day after day, and several times in a day, till all the young had perfectly mastered it, and were full-grown; and, as has already been remarked, it was observed as often and by as many persons as knew of the fact and had curiosity, and by the lady above-mentioned, very frequently, so that no doubt can be entertained of the fidelity of the narration.

2. *The following relation was likewise made to me, by Mr. Deming, the gentleman mentioned as the communicator of the preceding facts.*

IN the spring of the year 1793 or 1794, a male and female ROBIN* built their nest in the well-crotch, behind the house of Mr. Deming, and but a few feet from the door. Nothing peculiar was observed in their demeanour, during the time of incubation, or before. After the birth of the young, the mother manifested the most extravagant joy and pride; and (contrary to what is believed to be the

* *Turdus Migratorius Linn.* Dr. Waterhouse (Morse's Universal Geography, Vol. I. p. 209. Note.) erroneously supposes that our robin is not the turdus migratorius of Linnæus. It is true, I believe, that this bird is peculiar to America. The mistake of Dr. Waterhouse probably arose from his observing this bird inserted in the catalogue by the name of robin redbreast (by which name it is called in some parts of the United States, in others simply the robin); whence he may have thought that the author of the catalogue meant to designate the English robin red-breast, which is a very different bird, it is true, not a native of this country, and is the *Motacilla rubecula* of the Swedish Naturalist.

general practice of these birds); assumed to herself the exclusive right of feeding them. After distributing among them whatever she herself had brought, she has been (perhaps a hundred times, and by all Mr. Deming's family,) observed to take the worms, &c. from the bill of the male, and distribute them likewise.

When the young birds were about half-grown, the lady of this gentleman accidentally witnessed the following singular circumstance. The male and female came to the nest with worms. The female, as usual, parted her's among the young; when the male (as it were, desirous to assert the equality of his rights) made a motion to distribute that which he had brought. Immediately the female, with violent expression of anger, snapped her bill together with a noise so uncommonly loud, that it might have been heard some rods, and the terrified and submissive husband instantly desisted, and remaining motionless, quietly permitted her to take the worm from his bill, and distribute it herself as before. After this, the male seems never to have made a second attempt to recover his authority; as it was always observed, that though he brought food as well as the female, he uniformly acquiesced in her exclusive distribution of it.

And this was noticed after the circumstance above-related, very many times.

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3. *The next set of facts also relate to the* ROBIN (turdus migratorius); *and though less curious than the preceding, tend still further to illustrate the character of this bird. They were communicated to me by my father, Mr. Reuben Smith, of Lichfield, Connecticut.*

HE informs me that a *robin* has annually, for some years, built her nest in a stately pine-tree, directly before his window. Two years since, her nest was thrown down, and the young devoured by a red squirrel: but this accident did not prevent the bird from returning the next year, and the present. The last spring, she began to construct her nest as usual; but before it was completed, a blue-jay and several black-birds frightened her away, took possession of the tree, and built their nests in it. This was an usurpation which they were not permitted to enjoy. After they were all shot and their nests completely destroyed, the robin returned, built anew, laid, hatched, and reared her young as in former years.

4. *Extract of a Letter from T. Reeve, Esq. (an eminent Counsellor in Connecticut) to Mr. R. Smith, of Lichfield.*

"AT this distance of time, it is probable that very many things which I observed respecting the ROBIN which I mentioned to you, have escaped my memory. Among many singular instances of sagacity, I remarked that the robin (who had his perch in the room where I lodged,) understood me perfectly well when I called in the morning to a young woman who lived with us, informing her that it was time to rise. If it happened that I did not awake her by calling, the bird would fly from his perch into her room, and after making all the noise in his power, if this did not answer his purpose, would get upon her head, pull her hair with his bill, and peck her in the face till she awoke.

"It was certain that he was capable of improvement; for, after practising for some time in the manner just mentioned, he assumed the office of awaking her himself, whether I called or not. About the same time in the morning, if the young woman had not risen, he regularly awakened her.

"When evening came, the bird perched himself upon some chair in the room we were, till we went to bed; when he followed us to our chamber, and flew upon his accustomed perch.—I observed that his constant practice was in the evening, when he perched on the chair, to sing before going to sleep; and it was as uniformly his custom to sing, in the morning when first awakened.

"Whenever any of the family inquired where *Bob* (the name by which we called him) was, he answered, and continued to do so till it was certain that it was known where he was; but if any stranger, or person not belonging to the family, made the same inquiry, he remained silent. Yet, in that case, if a member of the family said to him—*Why do you not answer, Bob?* he replied immediately, and always remarkably loud."

Oct. 21, 1797.

"P. S. I forgot to mention, that a cat which was remarkable for catching birds in the fields, never offered to do any injury to this robin."

CONSUMPTION AND FEVER.

A patient of Dr. Croswel, of Kaat's-Kill, in this State, died lately of phthisis pulmonalis, of considerable duration. The Dr. informs me that his patient, after the pulmonary complaint had proceeded so far that a regular cough, hectic, and expectoration of pus had taken place, was seized, when absent on a visit to Connecticut, with a regular intermittent, which continued for two or three weeks, without any very important abatement of her phthisical symptoms. After the disappearance of the ague and fever, the consumptive symptoms increased in violence, till, in about six or seven months, they terminated fatally.—It is further to be remarked, that the phthisis of this patient was supposed to have been occasioned by a severe intermittent, from the effect of which her constitution seemed never to have perfectly recovered.

Remark. One of two inferences would appear to be naturally deducible from these facts: 1st. That Mr. Hunter's doctrine of the incompatibility of the co-existence of two district actions in the system is unfounded—or, 2d. That the causes of phthisis and intermittent are only different in degree.

The following Case of LUMBAR ABSCESS, *remarkable for the Circumstances attending the Discharge of Pus, was communicated by Dr.* BORROWE, *too late for Insertion in the Body of the Work.*

"JOHN TOOLE, aged twenty-eight years, a stout muscular man, was admitted into the New-York Hospital, the 9th December, 1796, for the cure of Syphilis. Some considerable time after his admission, a large tumour was discovered in the right groin, or upper and fore part of the right thigh. The integuments were of a natural colour; and on coughing, there was a great influx of matter into the tumour. From these circumstances, together with his complaining of much pain in the loins, there remained no doubt of the disease being a lumbar, or psoas abscess. An operation was proposed, which he objected to; and, by some mistake of the house-surgeon, he was discharged. He was re-admitted the 28th of April, 1797. Some few days after, the contents of the abscess were let out, by a small puncture, made with a common lancet, as proposed and recommended by Mr. *Abernethy*. The discharge was large, mild, and inodorous. The

opening was carefully closed, and confined with adhesive plaister, and a bandage. Eight or ten days after, the tumour became painful and much enlarged; the integuments were now considerably inflamed; the patient's strength failed; he had frequent chills, night sweats, and a troublesome cough. The abscess was again opened, and about seven pounds of green fœtid matter discharged; the puncture was dressed as before. The cough, chills, and night sweats still continued, and he complained of great debility. He was put on the use of bark, wine, and elixir vitriol. Some short time after the last operation, the tumour burst, and discharged a large quantity of dark fœtid pus, which was so extremely acrid, as to excoriate the skin. The discharge gradually disappeared;—the opening healed up;—and he evacuated the same kind of matter in great quantities, with the urine: this continued during the greater part of the summer. It, however, became of a more mild nature, and he passed it in smaller quantities; his strength returned; the discharge ceased; and, on the 21st of August, 1797, he left the Hospital, cured.

It is now four months since, and he has not had any return of the complaint; his health is much mended, but the leg is still somewhat œdematous. Did this discharge of matter, through the urethra, take place in consequence of a direct communication between the bladder and cyst of the abscess? Or was it conveyed to the bladder by a retrograde action of the absorbents?"

In the IIId Part of his "Surgical and Physiological Essays," (which, I believe, has not yet reached America,) Mr. Abernethy has added a long Supplement to his Essay on the Lumbar Abscess. From this it appears, that he "has lately found this species of abscess more frequently connected with a disease of the bone than he originally believed. In other cases, he has found his practice to answer. Electricity, also, he has found so serviceable, with occasional emetics, that he hopes many of those abscesses may be dispersed without any permanent exposure of their cavity." [Monthly Review Enlarged, Sept. 1797.]

E. H. S.

METEOROLOGICAL OBSERVATIONS *for October, 1797, made by* GARDINER BAKER, *in the Cupola of the Exchange in the city of* New-York.

Days of the Mon.	Thermom. observed at Sun-rise.	Thermom. observed at 2 P. M.	Prevail. winds. S. r.	Prevail. winds. 2 P.M.	Clear.	Cloudy.	Barometer observed at Sun-rise.	Barometer observed at 2 P. M.
1	56	58	E	N E		2	29 90	29 72
2	56	72	W	S W	2		29 60	29 50
3	61	77	W	W	2		29 52	29 44
4	66	56	S W	N W	1	1	29 6	29 4
5	45	62	W	W	2		29 45	29 56
6	54	70	S W	S E	2		29 65	29 55
7	59	70	S W	S W	1	1	29 62	29 59
8	56	67	S W	S E	1	1	29 55	29 28
9	54	62	W	W	2		29 35	29 48
10	42	49	N W	N W	2		29 64	29 67
11	38	53	W	S	1	1	29 75	29 78
12	38	52	N W	N	2		30	30 2
13	41	55	N E	S E	2		30 10	30 7
14	48	60	E	S		2	29 90	29 80
15	50	57	W	N W	2		29 74	29 74
16	39	55	W	W	2		29 74	29 69
17	40	60	W	S W	2		29 66	29 50
18	52	64	S W	N W	2		29 42	29 42
19	43	57	N W	N	2		29 65	29 67
20	42	61	N E	E		2	29 70	29 63
21	53	55	E	E		2	29 56	29 49
22	47	48	E	N E		2	29 15	29 22
23	47	58	W	W	1	1	29 43	29 50
24	45	49	S E	E		2	29 61	29 58
25	40	51	W	N W	2		29 67	29 71
26	40	54	W	S W	2		29 82	29 83
27	42	60	S	S	2		29 82	29 71
28	48	52	S	S W		2	29 50	29 40
29	43	47	S W	N W		2	29 38	29 35
30	34	44	N W	N W	1	1	29 53	29 58
31	40	53	W	W	2		29 71	29 70

Results of Meteorological Observations for October, 1797.

Mean temperature of the Thermometer at sun-rise, deg. 47 6 hund.
Do. do. of the do. at 2 P. M. 57 7
Do. do. of the do. for the whole month, 52 6
Greatest monthly range, between the 3d and 30th, 43
Do. do. in 24 hours, on the 17th, 20
Six days it rained, and a very large quantity has fallen.
Two days it thundered and lightned.
Coldest day the 30th. Warmest day the 3d.

METEOROLOGICAL OBSERVATIONS *for November*, 1797.

Days of the Mon.	Thermom. observed at Sun-rise.	2 P. M.	Prevail. winds. S. r.	2 P.M.	Clear.	Cloudy.	Barometer observed at Sun-rise.	2 P. M.
1	40	58	W	S W			29 75	29 77
2	46	63					29 99	29 99
3	48	66	S	S W			29 96	29 97
4	46	61	E	E		1	29 72	29 58
5	62	62	S	S E		2	29 10	28 85
6	40	48	W	W	1	1	29 29	29 39
7	34	41	N W	N W	2		29 78	29 75
8	35	48	W	S W	1	1	30	29 97
9	50	60	W	W	1	1	29 61	29 60
10	34	42	N	S E	2		30 1	30 5
11	40	44	N E	N E		2	30 7	30
12	58	61	S E	S E		2	29 62	29 40
13	50	58	N W	S W	2		29 60	29 57
14	50	56	S	W	1	1	29 34	29 34
15	34	34	N	N E		2	29 56	29 51
16	20	28	N W	N W	2		29 70	29 70
17	21	25				2	29 59	29 38
18	17	29	N	N W	2		29 60	29 64
19	27	34	W		1	1	29 58	29 50
20	25	31	W	W	2		29 68	29 58
21	26	32 50	W	N		2	29 58	29 63
22	30	33	N E	N E		2	29 62	29 50
23	35	39	N E	E		2	29 51	29 27
24	31	34	N W	N W	2		29 45	29 57
25	30	37	W	W	2		29 54	29 47
26	34	32	W	N W	2		29 25	29 33
27	20	27	N W	N W	2		29 48	29 45
28	22	30	W	N W	2		29 45	29 43
29	26	34	W	N W	1	1	29 59	29 41
30	24	30	N W	N W	2		29 54	29 56

Results of Meteorological Observations for November, 1797.

Mean temperature of the Thermometer at sun-rise, deg. 35 16 hund.
Do. do. of the do. at 2 P. M. 42 58
Do. do. for the whole month, 38 87
Greatest monthly range, between the 3d and 18th, 49 0
Do. do. in 24 hours, between the 14th & 18th, 22 0
Six days it rained, and a very large quantity has fallen.
One day it snowed, and 4 inches have fallen.
Coldest day the 18th. Warmest day the 3d.

METEOROLOGICAL OBSERVATIONS *for December*, 1797.

Days of the Mon.	Thermom. observed at Sun-rise.	Thermom. observed at 2 P. M.	Prevail. winds. S. r.	Prevail. winds. 2 P.M.	Clear.	Cloudy.	Barometer observed at Sun-rise.	Barometer observed at 2 P. M.
1	24	31	W	N W	2		29 74	29 75
2	28	29	W	E		2	29 76	29 67
3	30	35	E	N E		2	29 67	29 57
4	36	26	NW	N W		2	29	29 18
5	10	20	W	W	2		29 63	29 64
6	21	27	W	W	2		29 77	29 77
7	24	37	W	W		2	29 68	29 49
8	30	37	W	W		2	29 31	29 29
9	29	35	W	N W	1	1	29 30	29 32
10	24	30	W	W	2		29 72	29 80
11	21	28	W	W	2		29 96	29 75
12	32	38	W	W		2	29 60	29 53
13	40	44	W	N W		2	29 80	29 80
14	42	49	NW	N W	2		29 59	29 58
15	39	39	N E	N E		2	29 52	29 38
16	32	34	NW	N W	2		29 49	29 70
17	28	34	E	S W	1	1	29 91	29 79
18	32	31	W	W	2		29 58	29 63
19	14	23	W	S W	1	1	29 90	29 88
20	24	32	S W	S W	1	1	29 49	29 34
21	5	13	NW	N W	2		29 55	29 64
22	8	13	W	W		2	29 82	29 80
23	11	24	W	N W	2		29 97	29 99
24	12	26	NW	S W	2		30 10	30 6
25	26	34	NW	N W		2	30	29 90
26	36	41	NW	N W	1	1	29 60	29 63
27	16	19	N E	N E	2		29 88	29 89
28	1	16	N	N	2		29 90	29 82
29	11	25	N	N E	2		29 92	29 90
30	16	33	N	S	2		29 93	29 89
31	21	34	NW	N W	2		29 94	29 96

Results of Meteorological Observations for December, 1797.

Mean temperature of the Thermometer at sun-rise,	deg.	23 3 hund.
Do. do. of the do. at 2 P. M.		30 22
Do. do. for the whole month,		26 62
Greateſt monthly range, between the 13th and 28th,		43 0
Do. do. in 24 hours, 20th and 21ſt,		27 0

Three days it rained, and a conſiderable quantity has fallen.
One day it ſnowed, and about half an inch has fallen.
Coldeſt day the 28th. Warmeſt day the 13th.

A TABLE *of Patients admitted into the New-York Hospital, from the 1st of October, 1797, to the 1st of January, 1798; shewing the Disease for which each was received, with the Event of the Case.*

MEDICAL *Patients admitted in October.*

DISEASES.	No.	Cured.	Reliev.	Died.	Remain under Care.	Result.	
Dysentery	1	1					
Intermitting Fever	4	3			1		
Enteritis	1				1		
Syphilis	3	2			1		
Ascites	2	1			1		
Rheumatism	6	2			4		
Diarrhœa	2	1			1		
Palsy	1			1			
Mania	1				1		
Pneumonia	1				1		
Gonorrhœa	3	1			2		
Apoplexy	1				1		
Anasarca	1				1		
Catarrh	1				1	Received	46
SURGICAL.							
Wound	2	1			1	Cured	16
Syphilis	5	2			3	Relieved	1
Sore Legs	7	2	1		3&1e.	Died	1
Catarrh	2				2	Eloped	1
Opthalmia	1				1	Remain	27
Contusion	1				1		46

November.	MEDICAL.					
Rheumatism	4	1			3	
Anasarca	3			1	2	
Diarrhœa	2	2				
Pneumonia	3	1		1	1	
Dyspepsia	1				1	
Gonorrhœa	3	2			1elop.	
Syphilis	4	2			2	
Mania	1				1	
Intermittent Fever	2	1			1	

SURGICAL.

DISEASES.	No.	Cured.	Relieved.	Died.	Remain under Care.	Result.	
Sore Legs	10	2	1		7	Received	44
Bruise	2	2					
Syphilis	5	1			3&1e.	Cured	15
Tumor	2	1			1	Relieved	1
Lumbar Abscess	1				1	Died	2
Fracture	1				1	Eloped	2
						Remain	24
							44

December. MEDICAL.

Syphilis	6	2			4		
Rheumatism	6	2			4		
Diarrhœa	4	3			1		
Pulmonary Consumption	1				1 dis.		
Ascites	1				1		
Pneumonia	8	3			5		
Catarrh	5	2			3		
Gonorrhœa	2	1			1		
Amenorrhœa	1				1		

SURGICAL.

Sore Legs	10	2	2		6	Received	58
Frozen Feet	6				6		
Syphilis	5	1			4	Cured	16
Fracture	1				1	Relieved	2
Fistula in Ano	1				1	Discharged	1
Burn	1				1	Remain	39
							58

SUMMARY.

Patients received into the New-York Hospital from the first of October, 1797, to the first of January, 1798, exclusive of those then remaining under care, 148

Of this number have been *cured*,	47
relieved,	4
died,	3
eloped,	3
disorderly,	1
remaining under *care*,	90
	148

A RETURN *of Patients admitted to the Care of the New-York City Dispensary, from the* 1*st of Oct.* 1797, *to the* 1*st of Jan.* 1798.

OCTOBER.

DISEASES.	No.	Cured.	Reliev.	Died.	Removed to the Hoſpital.
Tumor Mammæ	1	1			
Hypochondriasis	1	1			
Piles	1	1			
Venereal Disease	4	3			1 u. care
Luxation	1	1			
Rheumatism	4	4			
Catarrh	2	2			
Pneumony	5	4			1 Hos.
Clap	1	1			
Eruption	1	1			
Remitting Fever	2	2			
Cough	2	2			
Bifid Spine	1		1		
Worms	2	2			
Vomiting of Blood	1	1			
Indurated Tumor	1				1 u. care
Small-pox Confluent	1			1	
Costiveness	1	1			
Itch	1	1			
Fracture	1	1			
Pain of the Side	1	1			

	Received	36
	Cured	31
	Relieved	1
	Died	1
	Removed to the Hospital	1
	Under care	2
		—36

NOVEMBER.

Dysentery	1	1			
Worms	1	1			
Costiveness	1	1			
Prolapsus	1	1			
Ulcer of the Leg	1	1			
Pain of the Side	1	1			
Diarrhœa	3	3			
Scald Head	1	1			
Venereal Disease	3	3			
Dropsy	2			2	
Small-pox	1	1			
Hysterics	1	1			
Cough	1	1			
Palsy	1		1		

	Admitted	19
	Cured	16
	Relieved	1
	Died	2
		—19

DECEMBER.

DISEASES.	No.	Cured.	Reliev.	Died.	Removed to the Hospital.	Result.	
Small-pox	5	4		1			
Hectic Fever	1				1		
Consumption	4				4 u. care		
Indigestion	2				2 do.		
Parturition	3				3 deliver.		
Venereal Disease	1				1 u. care		
Scald Head	1	1					
Dysentery	1	1					
Typhoid Fever	9	9					
Pneumony	1	1					
Fluor Albus	1	1					
Scrophula	1				1 u. care	Admitted	46
Sore Legs	4				4 do.		
Atrophy	1	1				Cured	24
Inflammation of Eyes	1	1				Died	1
Worms	3	3				Removed	
Erysipelas	1				1 u. care	to the	
Cough	1				do.	Hospital	1
Catarrh	1				do.	Under care	20
Wound	1				do.		—46
Canker of Mouth	1				do.		
Rheumatism	1				do.		
Chilblains	1				do.		

SUMMARY.

Whole number of Patients admitted into the New-York City Dispensary from the 1st of Oct. 1797, to the 1st of Jan. 1798, 101

Of this number have been *cured*,	71
relieved,	2
have *died*,	4
Removed to the Hospital,	2
Remain under care,	22
	101

SUMMARY.

Whole number of Patients admitted into the New-York City Dispensary from the 1st of Jan. 1797, to the 1st of Jan. 1798.

Admitted,	462
Cured,	384
Died,	18
Relieved,	18
Removed to the Hospital,	10
Country,	2
Eloped,	3
Disorderly,	1
Under care,	26
	462

HUGH M'LEAN.

City Dispensary, January 1, 1798.

MEDICAL NEWS.

DOMESTIC.

IN the *Second Number* of the REPOSITORY, we gave some account of an epidemic disease among CATS, which has prevailed very extensively in the United States. Since the publication of that number, we have received the following additional information.

The *cat-distemper* appeared in Hartford, Connecticut, about the last of July or first of August, 1797, where it is supposed to have carried off the greater part of these animals in that city. The symptoms which it exhibited there, of which we have obtained no very satisfactory account, resemble those noticed in New-York. It is not known whether the disease extended to the neighbouring towns. But it was observed at Poughkeepsie, in this State, towards the last of November.

From a Bourdeaux paper of October 24, it appears that France has been visited by a similar epidemic. One of the Health-officers had opened the body of a *cat* to discover the cause, and found in it a knot of worms: where, is not mentioned, nor is any important information added to what is already known to us.

Some time in October last, the town of New-Hartford, Connecticut, was alarmed by the sudden appearance of *hydrophobia*, or canine madness, among the DOGS of that place. Several persons are said to have been bitten by dogs supposed to be mad. The alarm which this occasioned was so considerable as to induce the magistrates of the town to exert the authority vested in them, by a law of the State, for the confinement of all the dogs. This law inflicts a penalty of seven dollars on all persons suffering their dogs to go at large; and permits the animals to be killed, if seen abroad. Shortly after, the *rabies* appeared among the dogs of Suffield, another town of Connecticut; and the present number of the Repository contains the melancholy history of a child who died in that place, in consequence of the bite of a rabid animal. The magistrates of Suffield have also enforced the statute against dogs. Similar steps have been taken in Hartford and New-Haven, where this disease has also broken out in the canine species; and where its extensive prevalence is very much apprehended. In the mean time, the disease has appeared in the neighbouring parts of Massachusetts, and has proved fatal to a child in West-Springfield, in

that State; notwithstanding an immediate course of mercury was entered upon, and pursued to complete salivation. We also observe by the newspapers, that several children, as well as dogs, have been bitten at *Salem;* but as there are several places of this name, (in Massachusetts, Connecticut, New-York, &c.) we are uncertain in which of them this event happened.

We have the pleasure to inform our readers and the public, that an intelligent and vigilant physician of Hartford, Connecticut, is observing the progress of this new and terrible epidemic, in that part of the country; from whose labours we hope to derive correct and extensive information, on this very interesting subject.

Dr. Mitchill has received a letter from a physician of New-Jersey, containing the following circumstances concerning canine madness. A dog belonging to the physician himself was affected with this disease, which assumed the following appearances—it began with inflamed eyes and disturbed mind—a spasmodic rigidity soon invaded one of the fore legs, the part bitten, and gradually proceeded to the other limbs, and the trunk of the body—the symptoms of hydrophobia did not appear till the day before his death. Alkalies were given to this dog, with manifest alleviation of the smptoms.

The physician traced the disease to the first dog known to be affected in the country where he resides: this dog had been feeding upon some putrid dead bodies of animals, soon after which he was observed to be sick, and to eject from his stomach the matters eaten. This dog bit two cows and a colt, on the farm to which he belonged; one was a milch cow, and was observed about 40 days after being bitten, to vomit a greenish matter when she was milked, and this happened twice before she turned mad. This matter, on examination, was found not to be the cud. The milk was used without injury. The colt was taken mad about 50 days after being bitten, and the other cow at a somewhat longer period. The above dog took his route through Elizabeth-town, and proceeded northward as far as Second River, and then returned to Newark, where he was killed. In this course he bit many animals, all of which died before the cows and colt above-mentioned. The physician also mentions three cases of cats bitten, all of which exhibited symptoms of delirium, puking of greenish bile, &c.

The same physician has also collected observations of farmers in his neighbourhood, relative to the difference of result in fat and lean hogs bitten by a rabid animal. The fat hogs escaped without injury, but on the lean ones the poison exerted all its worst effects. A lean hog was bitten on the upper part of one of the thighs, which immediately became violently inflamed, and soon mortified: this hog lived but one day after the bite, and remarkable purple appearances were discovered on the body after death. It is ob-

served also by the same gentleman, that among a number of animals some time ago bitten by mad dogs, none escaped except one cow, who had greedily devoured two quarts of common salt. The reader will remember that the probable usefulness of volatile alkali in case of canine madness, was mentioned in the Medical Repository, No. I. p. 87. If any other cases of this disease should have occurred to any other of our readers, attended with remarkable circumstances, the communication of them is requested.

In our last number, we made mention of a CALF whose *heart* was very singularly placed. Since then, the animal having died, there has been opportunity to examine, and conclusively determine that it was really the heart. By some misapprehension of the keeper, the gentleman who designed to have made a minute anatomical examination of the heart and surrounding parts, was not apprized of the death of the creature, till after the keeper had removed that viscus from its situation. It was therefore impossible to make such an examination as was intended. On inspection, there appeared nothing remarkable in the heart itself, but its *figure;* which bore some resemblance to a work-bag, while that part which is usually denominated the base, was, in this instance, the smallest.

CALVIN PHILIPS, a remarkable dwarf, has been exhibited as an object of curiosity, to several thousand spectators in this city, during the course of last December. He is seven years old, between 26 and 27 inches high, and his weight, as taken in the course of the last autumn, was 12 pounds, including his clothes. His figure, thus dimunitive, displays a pleasing and elegant proportion; and his face, though thin and long, is made up of regular and agreeable features, corresponding to his age rather than size, and indicating a degree of maturity, in point of evolution, much beyond his years. His complexion and hair are light, his eyes blue, and his general aspect delicate. The palms of his hands and soles of his feet have acquired much of the hardness, and the former are a good deal marked with the lines, belonging to adult age. On inspection of his body, undressed, no deformity or deficiency could be discovered; but, on the contrary, the utmost completeness and symmetry of every part. He is active, playful, sprightly, and very irascible. In general, he is averse to any minute examination of visitors; and is commonly occupied in the sports of children, to which he is devoted in a remarkable degree. His voice is shrill, and less articulate than common at his age. His mental attainments appear to fall rather below the ordinary standard, at his age.

In his travels as a public spectacle, this dwarf is superintended

by his maternal grand parents. The grand-father is a large and robust man, aged 56 years; the grand-mother is about the middle size, and aged 54. Both of them are now in good health, and have generally been so throughout their lives. These persons give the following account of their grand-child.

They state that he was born at Bridgewater, Massachusetts, on the 14th of January, 1791; that the father of the child is of the common size, the mother rather above it; the former 24, the latter 26 years of age when the child was born, and both of good health and sound constitutions—that these parents had two children before this dwarf, and three since, all of them healthy and of usual size, and of whom four still survive—that all the circumstances of gestation and parturition were natural—that the child was so small at birth, as to be supposed scarcely to weigh two pounds; his thigh not exceeding the thickness of a man's thumb, and his whole hand readily covered by a cent—that his mother often carried him in her bosom, while engaged in spinning—that, notwithstanding this diminutiveness, he shewed all the marks of a lively and healthy child, particularly that of good appetite—that he was exempt from all the diseases of early infancy, and has enjoyed good health ever since, except the hooping-cough last spring, which was very favourable, and being once disordered with worms—that he was weaned at seven months, began to creep at nine months, and to run about at eighteen months—that he got his first teeth at ten or eleven months, without pain or difficulty, and has since had the common number, two of which are already shed—that, from the birth till two years old, he grew very slowly, afterwards more perceptibly till five, and since that period, for the last two years, has altogether ceased to grow; which is ascertained by weight, and by the size of his clothes worn two years ago—that, on his ceasing to grow, the change with respect to the hardness of the palms of his hands and soles of his feet, soon took place—that he was upwards of four years old when he began to speak, and has rapidly improved in this respect within the last year—that he never learned but a few letters of the alphabet, which were acquired some time ago, and are now nearly forgotten—that since weaning, he has been always fed upon the common articles of diet given to children; he eats moderately, but sufficiently; and is particularly fond of fruits and cyder—that he never was in the habit of drinking any kind of distilled liquor—that he sleeps in an easy and natural manner, generally goes to bed about seven o'clock, and continues to repose till four or five in the morning, but never sleeps in the day—that he never suffered any injury by blows, falls, or any other accidents—and that, finally, they are unacquainted with any cause to which his diminutive size may be ascribed.

From some circumstances in his behaviour, it has been sus-

pected that he discovers some degree of sexual propensity; and it is possible, this suspicion may be thought to derive countenance from the appearances of his face, hands, and feet, already mentioned, as well as from the extreme reserve and obstinacy with which he opposed any minuteness of inspection, while he was undressed.

It is difficult to pronounce concerning his intellectual capacity. To infer imbecility from a few uncertain and equivocal appearances, would be consistent neither with reason nor justice. On account of his figure, little attention has been bestowed in the cultivation of his understanding; the opinion that his mental and personal dimensions were alike small, has shut the avenues of instruction; and his situation in a variety of respects has been unfavourable to improvement. It is probable his present more enlarged intercourse with society, aided by any well directed exertions to educate him, will soon be sufficient to ascertain the comparative powers of his mind.

We are happy to be able to inform our readers, that Mr. Webster's valuable *Letters to Dr. Currie*, will be collected and published by the author very shortly; and that many new, extensive, and very important additions will be made, illustrative and confirmative of the principles advanced, and ably supported in the original letters.

A new Medical Association has lately been formed in Philadelphia, whose more particular object is to inquire into and elucidate the history and nature of pestilential diseases; without excluding attention to other subordinate objects. This association, which takes the name of *The Medical Academy of Philadelphia*, design to publish the result of their labours periodically. Their publications, it is expected, will consist of a semi-annual octavo volume; and the important subjects to which the attention of the members will be steadily directed, induce us to believe that they will receive that extensive encouragement, which, from the reputation of the gentlemen concerned, we may confidently pronounce they will amply merit.

Dr. Adam Khun has resigned the Professorship of the Practice of Medicine, in the University of Pennsylvania. A successor has not hitherto been appointed.

A valuable addition has been made to the store of medical instruction in Philadelphia, in the present season, by the institution of a regular and extensive course of *Obstetrical Lectures*, by Dr. William Dewees.

Dr. Rush is preparing for publication, a fifth volume of his "Inquiries and Observations." This volume, we are informed, is to contain two dissertations—on the Gout, and on Diseases of the Mind—and a History of the Yellow Fever for 1797.

Dr. Barton, the intended publication of whose Journal of a Tour through a part of the States of New-York and Pennsylvania, was announced in the second number of the Repository, designs first to publish a Memoir on the *Bronchocele*, or on Goitres, as observed in the State of New-York. This Memoir, which is in great forwardness, may be speedily expected. Dr. Barton's Journal will appear in the course of the ensuing spring or summer.

We are informed, that a work is soon to make its appearance, from Dr. Currie, of Philadelphia, on Bilious Remitting Fevers.

Mr. Thomas Brufe, sen. of Chestertown, Maryland, advertises Patent Instruments for *extracting teeth in a perpendicular direction*. His advertisement is accompanied with certificates, in favour of his instruments, from Doctors Shippen, Wilkins, and Goodwin. From the known talents of these gentlemen, there is great reason to expect much from this improvement in the operation of tooth-drawing.

It appears from a Charleston paper, that Dr. Ramsay has presented to the Medical Society of South-Carolina, a Memoir on the Autumnal Epidemic or Yellow Fever of Charleston. The opportunities which Dr. Ramsay must have had for observing this disease, lead us to expect that much valuable information will be found in this memoir. But, hitherto, we have not been able to learn, whether it has been made public by the society or the author.

FOREIGN.

IT appears from the Foreign Journals, that a Comet (which may be the same that was observed in America, by Mr. Merrick. See *News*, Medical Repository, No. II.) has been seen both in France and England: in France, by Citizen Bouvard, August 14; in England, by Miss Caroline Herschell, and Mr. Lee of Hackney, on the same night; by Mr. Capel Loft and Mr. Walker, August 18, 19, and 20; and by an anonymous observer, August 26. We have no further mention of this phenomenon in the United States.

Mr. Hodgson, printer of the *Newcastle Chronicle*, states, on the authority of a gentleman who has seen various experiments made, that Mr. Robson, tanner, in Newcastle, has discovered a method for ascertaining the quality of oak bark, so as to enable any person to estimate its intrinsic value, by finding the real quantity of essence it contains, in a few hours, without being deceived by its appearance. *Monthly Magazine, August*, 1797.

Mr. Van Marum, superintendant of the Teylerian institution at Haarlem, has discovered, that a piece of phosphorus, wrapped in a little cotton, and placed under the receiver of an air-pump, inflames spontaneously, when the air is exhausted to a certain degree, and continues to burn till it is consumed. It is singular, that this combustion should commence and continue in air, rarified to a degree that would immediately extinguish any other burning material. Mr. Van Marum explains this phenomenon by supposing, that the cotton which surrounds the phosphorus (for a piece of phosphorus placed in similar circumstances, but not enveloped with cotton, does not inflame) accumulates the caloric, or matter of heat, in its immediate neighbourhood, while, at the same time, the exhalations which phosphorus is constantly giving out when exposed to the air, can no longer rise, on account of its rarity, and thus the temperature is elevated to the degree at which phosphorus combines with the oxygene of the atmosphere, and inflammation takes place. This combustion was found to take place in air that had only $\frac{1}{300}$ of the density of the common atmosphere. It is certainly very singular, that the small portion of oxygene that could remain in air so rarified, should be adequate to support the combustion of the phosphorus; and that it was a real combustion, is proved by the diminution in weight of the phosphorus, as well as by the quantity of phosphoric acid formed and found on the plate of the air-pump. [*Monthly Magazine, Sept.* 1797.

Account of certain Memoirs published by the Polytechnic School at Paris. Extracted from NICHOLSON'S JOURNAL, *No* III.

IT has long been known, that the sulphure of pot-ash attracts the oxygene of the atmosphere, and separates it from the azote with which it is combined. Attempts were consequently made to construct eudiometers with this sulphure, in imitation of Scheele; but none of these gave the result with the requisite speed and accuracy. Guyton discovered, that by heating the sulphure, the combination is made instantly. He therefore advises to take a small retort filled with water, to place therein a small piece of sulphure, then to introduce the air and heat with a taper, to that place on which the sulphure rests. The absorption of the oxygene is immediately made, and the desired result ascertained.

By this invention, which contributes to the accuracy and value of an instrument greatly used in meteorological observations, Guyton has rendered a real service to philosophers.

Gottling had maintained, in a memoir published in Gren's Journal, that phosphorus burns in azotic gas, forms an acid by this combustion, and does not burn in oxygenous gas. Berthollet made several experiments on the combination of phosphorus with different gases. He found, 1. That the phosphorus does not combine with oxygene at the ordinary temperature, but requires a more elevated temperature to produce combustion. 2. That phosphorus is soluble in the azotic gas; and that, by means of this solution, it burns with oxygenous gas at the ordinary temperature, and appears luminous in the dark.

By means of these experiments, Berthollet explained the extraordinary phenomena which Gottling, Lemps, and Lampadius had observed; and he imagined, that phosphorus might be used to measure the quantity of oxygene gas contained in the air of the atmosphere, or any other gas containing azote.

This new eudiometer has an advantage over other instruments of the same nature, by shewing the precise instant of the total absorption of oxygene, which happens when no more white vapour is seen in the day light, nor light in an obscure place; but it has likewise the inconvenience of requiring the presence of a quantity of azote sufficient to dissolve the phosphorus readily before its combination with oxygene.

Clouet had published in a memoir, that the prussic colouring principle might be obtained by passing ammonical gas through ignited charcoal. The experiments related by Bonjour, in the third cahier of the Journal of the Polytechnic School, consist merely of the processes he made use of, and the trials he made in the presence of Clouet, to verify the phenomenon he had announced, and which, after a most careful examination, proved to be in every respect agreeable to the account which was published.

It was formerly observed, that snow preserves the vegetative power, and that rain accelerates the growth of plants more than artificial waterings. Hassenfratz has inquired, in his memoir, into the cause of these comparative effects. He shews, from several experiments, that the preserving power of snow arises from two circumstances; its imperfect conducting power, and its oxygenation. This philosopher has proved, that snow is water oxygenated and converted into the solid form. He has also shewn, that rain is more oxygenated than any other water, and that a large portion of its good effects is to be attributed to this circumstance.

The Memoir on the Arts is written by Chaussier. Its object is to describe the composition of a liquor proper to be substituted

instead of wine lees in fulling, to obtain the greatest effect with the most facility and economy.

The liquor indicated by Chaussier, is a small quantity of sulphuric acid. This acid bath, which experience has assured him may be used with invariable success, likewise affords the advantage of obtaining a very white colour in hats, because the felt does not become coloured in the working.

Mr. Sheldrake, truss-maker, of the Strand, London, has lately obtained a patent for several new invented trusses, which, from the account given of them, promise to be of very great importance in removing various disagreeable and even dangerous deformities; such as *club feet*, the *wry neck*, *incurvated spine*, &c. An intelligible account of his trusses cannot be given without the aid of plates; but such persons as feel a particular interest in this subject, are recommended for further information to "the Monthly Magazine" for September last. As an evidence of their utility, we subjoin the following opinion of Mr. Ford, the respectable author of an excellent treatise on the Disease of the Hip-Joint. It relates to the case of a child, with feet very much distorted; which, having been admitted into the Westminster Dispensary, was afterwards referred to Mr. Sheldrake.

"Mr. Ford presents his compliments to Mr. Sheldrake, and has "great satisfaction in seeing the child of Mr. Wells, who appears "to him perfectly cured of the distortion in his feet."

"*Golden-Square.*"

After the preceding title was sent to the press, the two following articles were received from the Rev. Dr. Morse, of Charlestown, (Massachusetts) in a letter to Mr. Smith. The first is a printed paper, which appears to have been taken from some British periodical work. The second is a copy of a letter from Dr. John Brickell, of Savannah, to the Selectmen of Boston. The want of time to give any other form to these communications; the importance of circulating the earliest information on this subject to those parts of the country which are most immediately exposed to the ravages of rabid animals; and the higher authenticity which facts derive from the signature of the original observers; will, we trust, excuse us both to Dr. Morse and Dr. Brickell, for having, in some degree, deviated from the line of conduct they wish us to pursue, in respect to these papers. We agree with Dr. Morse, that it is to be regretted that "Dr. Brickell "had not left us to infer that the dogs that bit his patients were "really mad;" and that "if he had stated the fact that they ac-"tually died of the disease, or that the animals or persons bitten "by them, and to whom his remedy was not applied, had actually "received the infection, his communication would have been more sa-"tisfactory."

SYMPTOMS OF MADNESS IN DOGS.

MR. Meynell, of Quorndon, in Leicestershire, has paid great attention to this disorder among his dogs, and has readily communicated the result of his accurate observations.

The first symptom of canine madness in dogs, is, I believe, a failure of appetite in a small degree. I mean, that the dog does not eat his usual food with usual eagerness; though, if better food be offered him, he may eat it greedily. A disposition to quarrel with other dogs comes on early in the disease; a total loss of appetite generally succeeds; though I have often seen dogs eat and lap water the day before their death, which generally happens between seven and ten days after the first symptom has appeared. A mad dog will not, I believe, cry out on being struck, or shew any sign of fear on being threatened; though he will, very late in the disease, appear sensible of kind treatment.

I have never known a mad dog shew symptoms of the disease in less time after the bite than ten days; and I have known many instances of dogs having died mad, as late as eight months after the bite. I think the symptoms generally appear between three and eight weeks after the bite.

A mad dog, in the height of the disorder, has a disposition to bite all other dogs, animals, or men. When not provoked, he usually

attacks only such as come in his way; but having no fear, it is peculiarly dangerous to strike at, or provoke him.

Mad dogs appear to be capable of communicating the affection early in the disorder, and as soon as they begin to quarrel with or bite other dogs. The eyes of mad dogs do not look red or fierce, but dull; and have a peculiar appearance, which is easily distinguished by such as have been used to observe it; but not easily to be described.

Mad dogs never bark, but occasionally utter a most dismal and plaintive howl, expressive of extreme distress, and which, they who have once heard, can never forget, so that dogs may be known to be going mad, without being seen, when only this dismal howl is heard.

Mad dogs do not foam or froth at the mouth, but their lips and tongues appear dry and foul or slimy.

Though mad dogs generally refuse both food and drink in the latter stage of the disorder, yet they never show any abhorrence or dread of water; will pass through it without difficulty, and lap it eagerly to the last; but it is remarkable, though they lap water for a long time, and eagerly, and do not seem to experience any uneasiness from it, yet they do not appear to swallow a single drop of it; for however long they may continue lapping it, no diminution of quantity can be perceived.

I am persuaded, that this disorder never originates from hot weather, putrid provisions, or from any other cause but the bite; for, however dogs may have been confined, however fed, or whatever may have been the heat of the season, I never knew the disorder to commence without being able to trace it to that cause; and it was never introduced into the kennel but by the bite of a mad dog.* The hair of a mad dog does not stand erect more than that of other dogs. I do not know that there is any thing remarkable in a mad dog's carrying his head or his tail. I do not believe that dogs are more afraid of a mad dog, than they are of any other dog that seems disposed to attack them.

There are two kinds of madness, both of which I have known to originate from the bite of the same dog. Among huntsmen, one is known by the name of raging, the other by that of dumb madness. In dumb madness the nether jaw drops, and is fixed; the tongue hangs out of the mouth, and slaver drops from it. In raging madness, the mouth is shut, except when the dog snaps or howls; and no moisture drops from it.

We have thus presented to our readers, in Mr. Meynell's own words, his principal remarks respecting the signs of rabies in dogs.

* This can not be true in the extent here fuppofed.—On this fuppofition, how could the difeafe appear in a new country? How could it originate at all? What firft occafioned, may occafion it a fecond time. *Editors.*

These, we apprehend, if properly attended to, will afford more exact and more authentic information, than has hitherto been given concerning it.

While they serve to correct mistaken ideas which have generally prevailed, drawn from supposed appearances which have no existence, they, at the same time, point out sufficient marks by which this affection in dogs, even at its commencement, may be distinguished. And whenever a failure of appetite and an uncommon disposition to quarrel with other dogs appear, the animal should certainly be secured as soon as it can with safety be effected. If these symptoms be the first stage of this disorder, the dulness of the eyes, the want of barking, and the dismal plaintive howl will soon characterize the disease; and thus accidents of the most dreadful and melancholy nature may be prevented.

TO THE SELECTMEN OF BOSTON.

ACTUATED by a love for you and all my other fellow mortals, (children of the same parent) I take the liberty of communicating a method of preventing any bad effects from the bite of a mad dog: as I perceive, by the perusal of newspapers, that some fatal instances of hydrophobia have happened in your State. The method is to *wash the bitten part with 20 or 30 kettles full of water, poured from the spout of the kettles, or a mug; and afterwards to burn the wound as deep as the bite has penetrated, with the end of a case knife, or any other iron made nearly red-hot.* The washing is to carry away, from in and around the bite, the saliva, (in which the infection exists); and the burning is to extirpate any infected part. In washing, I hold the kettle high over the bite, that the force of the descending stream may act with the more effect. The ancient method was cutting out or burning; but washing escaped them.

I published the above, several years ago, in the Savannah Gazette; but its limited circulation prevented it from being extensively known.

The remedy having being often applied, in Georgia, without once failing, is a favourable circumstance.

On perusing, some years ago, the annual publications of Dr. Duncan, of Edinburgh, which consist chiefly of medical information sent to him, by men of science, from all parts of the world; I observed two cases reported of persons bit by a mad dog, being directly carried to a surgeon, who immediately cut out the bitten parts; notwithstanding which, they both died in hydrophobia. The doctor subjoins a melancholy question, whether the infection is of a nature so tenacious, as not to be extirpated by any means, when a person is bitten by a dog *really* mad? and intimates a sus-

picion, that in the cases recorded of people being bit, and escaping the hydrophobia by medical aid, the dogs were not *really* mad, or had not the *rabies*.

Sentiments of this kind, coming from an authority so great, set me to thinking on the subject; and, with the more earnestness, as we were alarmed by a report of mad dogs being in the State. It is observable, that mad dogs have frequently abundance of saliva about their chops, which, of course, will be spread on and round their bite—and that the virus is in the saliva.

It therefore occurred to my thoughts, that the surgeon's knife (in the above cases) in cutting, carried into the incision part of the saliva from the surface, and planted anew the disorder, as the lancet plants the small-pox, in inoculation.

A little time furnished an occasion for putting my reflections to the test. Three persons were bitten, one a negro girl of my own, on the naked foot. I applied the washing with all possible speed—afterwards the hot iron or cutting, as they preferred. After the lapse of a length of time sufficient to convince me that they were out of danger, I had the cure published in our Gazette, in which, however, I only mentioned washing and burning, which any person can apply; as cutting sometimes requires the hand of an anatomist.

I took an early opportunity of writing to Dr. Duncan on the subject; likewise of making it known in London and other places; and sent it by an official conveyance to Paris; where I observe, the government had it published under the denomination of a *decret d'instruction*, with this improvement, that *spirit of nitre* poured into the bite, would destroy the parts as effectually as burning.

If the simple and plain remedy here proposed is already known among you, the motive which prompted me to give this trouble, will, I hope, plead my apology; but if I should be instrumental in averting a calamity the most direful, terrific, and humiliating; a disorder which deranges the faculties of the wisest, and converts the mildest man into a fiend in appearance; I shall feel myself fully rewarded, in so far *doing my duty to my neighbour*.

I will just remark, that in all the cases which have come under my care, the washing was applied in less than an hour after being bitten; and the hot iron as soon as possible after. And without doubt, the sooner the applications are made, the better is the chance of escape.

Should it be thought adviseable to give this, or any part of it, to the printer for publication, my name need not be mentioned, as it has already appeared in our gazette on this subject.

I am, Gentlemen, with kind wishes,

Your friend and fellow-citizen,

Savannah, Georgia, Oct. 15, 1797. JOHN BRICKELL.

My highly esteemed friend Dr. Morse, whose profession and chief pleasure is doing good, will be so kind as to introduce me on this occasion, to the guardians of the city, as I have not the honour of a personal acquaintance among the worthy gentlemen.

His sincere friend,

JOHN BRICKELL.

APPENDIX.

DOMESTIC.

ARTICLE I.

The Report of the Commissioners of Health to the Mayor and City Council of Baltimore, consisting of facts and communications relative to the health of the city, since their appointment, and especially during the late prevailing sickness.

ON the 5th of June, the commissioners formed a full board, and proceeded to the business of their appointment, having been previously qualified according to law before the mayor. Their office requiring them to watch over, and preserve the health of the city, their first concern was to guard against the introduction of contagious diseases by importation. For this purpose, having appointed Conrad Smull, a suitable person, to take charge of the hospital on Hawkins's-Point, provided a boat and boatmen to attend on the health-officer, and for keeping up a communication between Hawkins's-Point and the city, and formed regulations for the government of the board—they gave such directions to the health-officer respecting the examination of all vessels coming from beyond the seas, as appeared necessary.

Nothing occurred to give the least uneasiness to the inhabitants, till towards the latter end of June, when Messieurs Parkin and M'Kenna, two young men who occupied a warehouse in South-street, were near one time seized with a disorder highly inflammatory, and which put a period to their existence in a few days. This circumstance occasioned some agitation in the minds of the citizens, and a report prevailed that their complaint was the yellow fever, and had proceeded from some putrid matter stored, or contained in their warehouse. A meeting of the board was called on this subject, and they attended personally, with several of the faculty, and examined every part of the said warehouse, and found nothing therein that could be the least injurious to health, it being in as clean and wholesome a state as any warehouse in the city. From what cause their complaint originated, is not for them to say, but leave it for those who may be more capable to determine; yet no discovery was ever made of any infection having been caught

from them. The board, nevertheless, apprehending that there might be some causes existing in some parts of the city, which in the course of the hot season then approaching, might prove fatal to the health of the inhabitants if not removed, concluded to go through the city, east and west, and examine every part, and represent to the mayor, all nuisances and offensive substances discovered by them, that the same might be removed in the manner the ordinances direct.—This disagreeable and laborious task they accomplished in about one week.

Their attention was then turned to guard against the importation of damaged hides, coffee and other damaged goods, and regulations were made concerning them. A greater strictness was also deemed necessary respecting the arrival of vessels from the West-Indies. An order was therefore published by the board, commanding all vessels from the islands to stop at or below the Fort ten days, and until permitted by the health-officer to proceed into port:—The same order extended to vessels coming from all other suspected places. A malignant fever about this time prevailing in Philadelphia, occasioned the board to provide a house on the road, a small distance from the city, to accommodate travellers from that place, in case it should be found proper to stop the communication between the two cities, which, however, was not deemed necessary.

July had passed, and August was ending, while the citizens of West Baltimore enjoyed unusual health. Many nuisances had been removed, and some low and sunken places had been filled up, in consequence of the report made by the board to the mayor; the streets were also kept cleaner than usual, and the healthiness of that part of the city was a common topic of conversation. In East Baltimore, (or Fell's-Point) on the contrary, it was somewhat different. A bilious complaint had early commenced, and appeared gradually progressing to a worse stage; yet no alarm had been excited, as it was supposed to be no other than the common sickness of the season; but the attention of the board was soon called to notice more particularly, the state of that part of the city.

On the 26th of August, a rumor began to be spread in West Baltimore, that the sickness at Fell's-Point was somewhat more than common. The chairman of the board immediately addressed a letter to each of the physicians in that part of the city, requesting them to inform the board, whether any case of contagious disease had come under their notice, and of the general state of the health in that district. Whereupon the following communications were received:—

Mr. ADAM FONERDEN, *Chairman of the Board of Health.*

SIR,

I AM favoured with yours of this morning, and hasten to give you all the satisfaction my judgment and experience will serve. Ever since the third week in June, I have observed in my district of practice, a particular species of fever becoming epidemic, affecting all ages, sexes and colours; but more particularly confined to that class of people who labour hard and exercise violently in the heat of the sun, live intemperately, or who imprudently expose themselves to the night air, by lying down in it after returning from work.—This is a very dangerous fever, and where its commencing symptoms are violent in degree, almost certainly fatal, if not early encountered with powerful remedies. From the frequent calls we have in all directions, it seems to be pretty generally diffused, and assumes to itself the sole government of our sickness. The number of sick, however, seems stationary. During the wet weather in the last of July and first of this month, it yielded for near two weeks to the dysentery, which has now decreased, and the usual epidemic again prevails. I have always been cautious of exciting any unnecessary alarm in the city; and while the fever is so manageable, and the deaths so inconsiderable to the number of sick, I am strengthened in the propriety of this conduct.—I have called it an epidemic, in contradistinction to an imported contagion, and because, if it is contagious, it is in the locality of our atmosphere, the source of which I can perceive in every ten steps I take in our streets; ponds of stagnant water, and sinks of putrid animal and vegetable matters, exhaling perpetually under a hot sun, the most offensive effluvia—even our market and the space around it not paved, and the earth constantly covered with offal matter thrown away by the butchers; it is strikingly true, that many of the sick to whom I have been called, went out well in the morning, and came home from market affected with the symptoms. The conclusion to be drawn, then, from these observations is, that I do not think the fever infectious individually, but from a certain aptitude in the body of every individual, in this climate, at this season of the year, meeting with the exciting causes of labour and fatigue in the heat, sudden obstruction of perspiration by rain or night air; intemperance in drink or diet; are thrown into fever, which fever is modified by the predominant exhalations with which the atmosphere is loaded. From the uniformity of the symptoms of the fever, which has prevailed here at this season for several years past, and its correspondence with the epidemics in other parts of the continent, I think we may safely reason in this way; and as the faculty in different situations have

given different appellations to what I think the same disease, it will be thought sufficient, perhaps, after what I have said, to enumerate the symptoms. It attacks suddenly, with violent pain in the head and eyes, back and limbs; languor, weakness, and sickness at stomach; great tenderness, heat, and pain at the pit of the stomach, and over the region of the liver, preceded mostly by a chill:—sometimes it approaches more slowly and insidiously, but not less dangerous; for, about the fourth and fifth day, if timely and proper remedies have not been administered, a hiccup and vomiting of blackish matter, like coffee grounds, sometimes mixed with dark-coloured blood, comes on, attended with profuse hemorrhages from the nose, gums, and intestines, which generally carries them off by the sixth day. I have prescribed for upwards of three hundred in this fever since June last, and I am sure I am accurate when I say, only eight of them have died; two only of whom were visited on the first day of their illness, and in one of these cases, I was interrupted in my method of treatment, and the other lay in a small and filthy apartment, with two more in the same complaint.

However, Sir, I am only one of five or six practitioners at this end of the city, and may, notwithstanding my success, be too sanguine, though not singular in my opinion; beg leave, therefore, to refer you to them for further information. I am, with much respect for you and the commissioners of health,

Your obedient and humble servant,

JOHN COULTER.

Baltimore, East, August 26, 1797.

TO THE SAME.

SIR,

IN answer to your request, I inform you that I have several patients labouring under a fever of a highly inflammatory nature; but when early application is made, generally yields to medicine. I cannot imagine those complaints to be derived from importation; neither do I conceive them to be contagious at present: but dread the subsequent consequences without some provision for the better accommodation of the poor in this place.

Yours, with the highest respect,

JOSEPH ALLENDER.

Baltimore, East, August 27, 1797.

TO THE SAME.

SIR,

OUT of about twenty-one patients now under my care, eighteen of them appear to be confined by bilious remittent and inter-

mitting fevers; and I am happy to add, that I have lost only two within these six or eight weeks that have died. In no case, that has come to my knowledge, has the disease originated from contagion. I believe our end of the city is as healthy as common for this season of the year.

I am, Sir, with respect,
Your most obedient servant,
J. JAQUITT.

Baltimore, East, August 27, 1797.

From these communications, the board was satisfied that the fever in question was not individually contagious; and that there was at that time no cause of great alarm, they conceived themselves warranted to believe, inasmuch as out of three hundred patients under the care of Dr. Coulter, a gentleman of undoubted veracity, he lost only so small a number as eight, from the third week in June to the 26th of August.

Yet they did not cease their inquiries here, but desirous of investigating the subject fully, invited all the physicians respectively known to them in every part of the city, to meet them at the Exchange, on the 28th of August. At that meeting Dr. Coulter's and Dr. Allender's letters were read, (the other not being yet received) and the question was put to every attending physician, whether any case of contagious or yellow fever had come under their notice, which (except one case of Dr. Davidge's, of a woman who had come from Philadelphia, but was then recovered, and one other case at Fell's-Point, thought somewhat suspicious by Dr. Smith) they individually answered in the negative. This sentiment was further confirmed by Doctors Goodwin, Moores, and Davidge, who, at the request of the meeting, went to Fell's-Point and visited a number of the sick, as appears by the following report:

Baltimore, August 29, 1797.

AGREEABLY to your request, we yesterday evening visited a number of sick at Fell's-Point, and are happy in assuring you that we discovered nothing like a malignant, contagious, or yellow fever: the patients we saw, all laboured under the common bilious remittent, and will generally recover with common attention: we therefore can very confidently say, that we do not think there is at present any cause of alarm.

LYDE GOODWIN,
DANIEL MOORES,
JOHN B. DAVIDGE.

The Commissioners of Health.

The result of these investigations was, that the uneasiness and fears of the people began to abate, it being generally believed that the complaint was of the bilious remittent kind; and the few deaths, compared to the number of the sick, inspired a hope, that by proper attention and assistance, the sick would generally be restored to health. Matters continued in this state until the 2d of September, when the chairman received a letter from one of the commissioners residing at Fell's-Point, of which the following is an extract:

"SIR,

"A communication has been made to me from Dr. Allender, "advising of several persons labouring under a fever, who, from "their filthy situation and want of necessaries, must fall victims "to the disease. Dr. Coulter, who attends my family, says that "the disease has much increased within these two days past. "There can be no doubt that we have something more than com-"mon amongst us. I should be glad that a few of the commis-"sioners would come down and view our situation."

The following morning, five members of the board, accompanied by Dr. Moores from the west part of the city, went to Fell's-Point, and, desirous of obtaining full information, inquired of the respective physicians there of the number of their patients, and how many of them they thought dangerous; and being conducted to the worst of them, went into their houses with Dr. Moores, the accompanying physician.

The result of this further labour was, that the disorder had indeed spread, yet chiefly among the poor who lived in confined houses; the number of deaths, however, as well as the number of sick deemed dangerous by the respective physicians, was comparatively small; the number of Dr. Coulter's patients, that were thought dangerous by his young man, was four or five; Dr. Allender's, three; the other physicians, not exceeding two. The attending physician was still of opinion, that as yet there was no contagion in the disorder, that the sick wanted good nursing more than any thing else, and that, with proper attention and care, many would recover.

There being no suitable hospital provided by the corporation, to which the indigent sick might be removed, the board had no other alternative than to afford relief to those who needed it, in the houses in which they lay: they therefore requested the practising physicians in that district, to inform any member of the board of such cases, that their wants might be supplied; and whenever such information was received, every necessary relief was afforded.

This being the real situation in which the commissioners of health found the Point on the 3d of September, they returned agreeably disappointed, that matters were not worse; and as it was not their duty to spread useless alarms, but to afford comfort and assistance to the sick who were in need, (which they had not neglected) they could not help feeling a hope, as Christians, that God, to whom all seasons and times are alike, would providentially interpose, and arrest the farther progress of the disease.

It was, however, in the ensuing week, that the disorder put on a more threatening appearance. A large number of people having collected to see the launching of the frigate, on the 7th of September, many of them getting wet, being exposed to a hot and disagreeable sun, and undergoing considerable fatigue, excited in themselves symptoms of the complaint. Hitherto the sickness was confined to Fell's-Point, but now several persons in West Baltimore, who attended the launch, were taken suddenly ill, and died in a few days—and it is worthy of observation, that until the day after the launch, the board of health never received any regular information that there was contagion in the disease; for at the meeting of the physicians and commissioners of health, at the Exchange, the former were requested, that whenever any case of a contagious disorder came under their notice, to leave information thereof with the chairman of the board, and on the 8th of September, and not before, was such information given by Dr. Moores.

In consequence of this advice, a meeting of the board was immediately called, to consult on the measure that *now* became necessary for them to adopt; it was agreed, in the first place, to call a meeting of the physicians generally, and ask their information and advice; accordingly, a large number of the faculty met on the 11th of September, of which the result was as follows:

"At a meeting of the physicians of Baltimore, convened at "the house of Mr. Fonerden, by desire of the commissioners of "health, in order to suggest the most effectual means of obviating "the evil effects of a disease, which has of late proved very fatal "at Fell's-Point, it was unanimously agreed to recommend to the "commissioners,

"That the causes which produce the disease, may be corrected "as far as possible.

"That all possible regard may be had to cleanliness, within and "without doors, by removing every thing filthy, putrid and offen-"sive, and particularly to preserve the persons of the patients "from uncleanliness.

"That all such as are diseased, and in a state that admits of "removal, and whose circumstances incapacitate them from pro-"curing the aid necessary, should have a proper place provided for "them.

"That the air of neglected and foul apartments be corrected by "chemical means.

"That too many persons, though in a state of health, be pre- "vented from crowding into the same apartment, or even into "the same houses.

"That all unnecessary communication with infected persons "and places be prevented.

"That the air of close and infected places be refreshed with "artificial showers, by means of fire-engines.

"That the necessities of the indigent, who are at present labour- "ing under the disease, should be relieved until it may be con- "venient to remove them."

At the close of this meeting the chairman requested the further advice of the physicians respecting two particulars: 1st. whether they thought it expedient or proper, that the board should, by a publication, advise their fellow-citizens to remove into the country; or whether, 2dly, they should endeavour to stop the communication between the town and Point—both of which they declared to be improper.

Here it will be regular to notice what was the duty of the commissioners of health at this crisis—The ordinance of the corporation, under which they were appointed, (page 45.) describes their duty, and the means to discharge it, thus—"*They shall cause all "persons actually labouring under infectious diseases, and not otherwise "provided for, to be removed to the hospital at Hawkins's-Point, or else- "where, distant from the city at least three miles; and provide for the "infected, such meats, drinks, bedding and clothing, as may be abso- "lutely necessary, or ordered by the health-officer; and with the advice "of the health-officer, or other practising physician or physicians whom "they may consult, may take such further measures in discharging the "trust confided to them, as may appear reasonable and proper.*"

Their duty is seen by the things they are to do. Their means are, the hospital on Hawkins's-Point, and 2000 dollars appropriated by ordinance, (page 103.) for the health department for the present year. With respect to providing for the poor sick, the necessary comforts and medical assistance their situation required, and promoting cleanliness as far as their authority and influence extended, they did carry into effect the advice of the physicians, and faithfully discharged their duty—they feel a consciousness of having neglected none when applied to for relief—they did not shrink in the hour of danger, but visited the sick, and were among them when their presence could be of service.

The removing the sick to an hospital, or a proper place to receive them, was not so easy. The hour of difficulty and danger had now come, but no proper place had been provided by the corporation—the hospital on Hawkins's-Point, was erected chiefly for

a marine purpose, but was supposed might be made use of in such an extremity as this for the citizens; the trial, however, was to be made—It was now made, and being found impracticable was abandoned. The opposing difficulties were the great distance of the place, the length of time the passage required, and the impossibility of getting there in rough and boisterous weather.

Men struggling with such difficulties, at such a trying time, with their funds nearly exhausted, every person looking up to them to stop the progress of the disease, or confine its limits, was discouraging indeed. However, after considerable search, a house for a temporary hospital was obtained, not far from the Point; to this were conveyed such poor sick as were not otherwise provided for; but the house being small, could serve but little towards checking the disease, or confining its ravages. It afforded, however, some comfort and accommodation to many, who otherwise would have suffered extremely. On the 11th of September, the hospital was opened; Dr. Way was employed to attend it; and, after some trouble and difficulty, five nurses were provided. We regret the necessity that obliged us to refuse admittance to some for whom application was made, when there was no room; this may have given offence: but was it possible for men, thus circumstanced, to avoid the censures of inconsiderate or weak minds? The smallness of the house constrained us also to adopt a resolution not to admit people of colour; they in like manner gave umbrage: but what man of reason could conceive it proper to crowd together blacks and whites, in a house too small to contain the whites? Had the house been sufficiently large to admit all who applied, and the funds in proportion, some useful lives might perhaps have been preserved. The funds, however, were only commensurate to ordinary years, and without any extraordinary sickness, are swallowed up by the marine department: of consequence a considerable debt is incurred by us. We know well that the corporation is yet in its infancy, and that every useful institution cannot immediately be adopted.

With respect to our not having alarmed the inhabitants and advised their removal, we shall only observe, the ordinance under which we acted required, in extraordinary cases, that "with the "advice of the health-officer, or practising physician or physicians, "we might take such further measures as might appear reasonable "and proper." But when the physicians of Baltimore were met in a body, and advised us not to take such a measure, our path was plain before us.

This plain, unadorned narrative of facts will enable the corporation and our fellow-citizens to judge of our conduct; they will hence see what credit is due to newspaper scribblers, whose aim is to write themselves into notice by a display of their talents; to

deal in exaggeration, slander, and falshood, is not difficult for such authors; they can with ease make a common grave-yard of a whole district, and turn a city into a deserted wilderness. The annexed list of the number of deaths, from the 1st of August to the 11th of September, both days inclusive, certified under the hands of the respective clergymen and sextons in the city, with the amount of the daily returns from thence to the 29th of October, and the whole number of persons that removed from Fell's-Point, and of those who remained, accurately taken from house to house, by persons appointed for that purpose, will assist to shew what was the real state of the city during the sickness.

We can with truth add, that we have endeavoured to do our duty to the best of our knowledge, with the means we possessed, in alleviating the sufferings of our fellow-citizens in every possible shape. If the services we have performed meet with the approbation of the corporation, and of our fellow-citizens, we are satisfied and ask for no other reward.

JEREMIAH YELLOTT,
ADAM FONERDEN,
JAMES EDWARDS,
EMANUEL KENT,
JOSEPH TOWNSEND,
ELIAS ELLICOTT,
JOHN STEELE,
THOMAS TENANT,
JAMES BEEMAN,
} Commiss'rs of Health.

Baltimore, November 17th, 1797.

The following is an accurate return of all the interments in the several burying-grounds in this city and precincts, from the 1st day of August to the 11th of September following, including both days, as certified under the hands of the respective clergymen and sextons, viz.

	Adults.	*Children.*
	97	74
Total amount of interments, daily published by the board, from the 11th of September to the 29th of October following, viz.	311	63
	408	137

Total amount of the number of persons that removed from Fell's-Point, and of those that remained during the sickness, viz.

Removed.	*Remained.*
671	2679

This enumeration was taken from the Causeway eastward, on each side of the Causeway-street, and from thence all to the southward thereof.

CORPORATION OF THE CITY OF BALTIMORE.

RESOLVED,

That the Commissioners of Health, for this city, since their appointment, and especially during the late prevailing sickness, have discharged the laborious duties of their office with care, attention, assiduity, and good faith, and have a just claim to the approbation and thanks of this Corporation.

November 20th, 1797.

In the First Branch of the City Council, read and agreed to unanimously.

HERCULES COURTENAY, President.

November 20th, 1797.

In the Second Branch of the City Council, read and agreed to unanimously.

JOHN MERRYMAN, President.

APPROVED, *November* 23, 1797.

JAMES CALHOUN, Mayor of the City of Baltimore.

ARTICLE II.

From the American Daily Advertiser.

Messrs. Claypoole,

You will oblige many of your fellow-citizens by publishing the following Letter from the Governor, and the consequent Report of a number of Physicians of this City, to which the Governor refers, among other Documents, in that part of his Address to the Legislature which regards the Health of the City, and a copious supply of Water by means of Canals, &c.

SIR, *Philadelphia, 6th November*, 1797.

I AM desirous to obtain, for the information of the Legislature, the most correct account of the origin, progress, and nature of the disease that has recently afflicted the city of Philadelphia, with a view that the most efficacious steps should be taken to prevent a recurrence of so dreadful a calamity. I have requested the opinion of the College of Physicians on the subject; but, as I understand that you and many other learned members of the Faculty do not attend the deliberations of that institution, the result of my inquiries cannot be perfectly satisfactory without your co-opera-

tion and assistance. Permit me, therefore, Sir, to beg the favour of you, and such of your brethren as you shall be pleased to consult, to state, in answer to this letter, the opinion which your researches and experience have enabled you to form on the important object of the present investigation.

I am, respectfully, Sir,
Your most obedient,
Humble Servant,
THOMAS MIFFLIN.

Dr. BENJAMIN RUSH.

SIR,

IN compliance with your request, the subscribers have devoted themselves to the investigation of the origin, progress, and nature of the fever which lately prevailed in our city, and we have now the honour of communicating to you the result of our inquiries and observations.

We conceive the fever which has lately prevailed in our city, commonly called the Yellow Fever, to be the Bilious Remitting Fever of warm climates, excited to a higher degree of malignity by circumstances to be mentioned hereafter.

Our reasons for this opinion are as follow:

1st. The sameness of their origin, both being the offspring of putrefaction. Of this there are many proofs in the histories of the Yellow Fever in the West-Indies. Where there is no putrefaction, the West-India islands enjoy a perfect exemption from that disease in common with northern climates.

2d. The Yellow Fever makes its appearance in those months chiefly in which the Bilious Fever prevails in our country, and is uniformly checked and destroyed by the same causes, viz. heavy rains and frosts.

3d. The symptoms of the Bilious and Yellow Fever are the same in their nature. They differ only in their degree. It is no objection to this assertion, that there is sometimes a deficiency or absence of bile in the Yellow Fever. This symptom is the effect only of a torpid state of the liver, produced by the greater force of the disease acting upon that part of the body. By means of depleting remedies this torpor is removed, and the disease thereby made to assume its original and simple bilious character.

4th. The common Bilious and Yellow Fever often run into each other. By depleting remedies the most malignant Yellow Fever may be changed into a common Bilious Fever; and by tonic remedies, improperly applied, the common Bilious Fever may be made to assume the symptoms of the most malignant Yellow Fever.

5th. The common Bilious and Yellow Fevers are alike conta-

gious, under certain circumstances of the weather, and of predisposition in the body. That the common Bilious Fever is contagious, we assert from the observations of some of us, and from the authority of many physicians who have long commanded the highest respect in medicine.

6th. The yellow and mild bilious fevers mutually propagate each other. We conceive a belief in the unity of these two states of fever, to be deeply interesting to humanity, inasmuch as it may lead patients to an early application for medical aid, and physicians to the use of the same remedies for each of them, varying those remedies only according to the force of the disorder. It is no objection to this opinion, that that state of Bilious Fever called the Yellow Fever, is a *modern* appearance in our country. From certain revolutions in the atmosphere, as yet observed only, but not accounted for by physicians, diseases have in all ages and countries, alternately risen and fallen in their force and danger. At present, a constitution of the atmosphere prevails in the United States, which disposes to fever of a highly inflammatory character. It began in the year 1793. Its duration in other countries has been from one to fifty years. It is not peculiar to the common Bilious Fever, to have put on more inflammatory symptoms than in former years. There is scarcely a disease which has not been affected in a similar way by the late change in our atmosphere, and that does not call for a greater force of depleting remedies than were required to cure them before the year 1793.

7th. and lastly. The Yellow Fever affects the system more than once, in common with the Bilious Fever. Of this there were many instances during the prevalence of our late epidemic.

The fever which lately prevailed in our city appears, from the documents which accompany this letter, to have been derived from the following sources.

1st. Putrid exhalations from the gutters, streets, ponds, and marshy grounds in the neighbourhood of the city. From some one of these sources, we derive a case attended by Dr. Caldwell, on the 9th of June—one attended by Dr. Pascalis, on the 22d of July, and by two cases attended by Dr. Rush and Dr. Physick, on the 5th and 15th of the same month; and also most of those cases of Yellow Fever, which appeared in the northern parts of the city, and near Kensington bridge, in the months of August, September, and October. We are the more satisfied of the truth of this source of the fever, from the numerous accounts we have received of the prevalence of the same fever, and from the same causes, during the late autumn in New-York, and in various parts of New-Jersey, Pennsylvania, Maryland, Virginia, and South-Carolina, not only in sea-ports, but inland towns. The peculiar disposition of these exhalations, to produce disease and death, was evinced early in the

season, by the mortality which prevailed among the cats, and during every part of the season, by the mortality which prevailed in many parts of our country among horses. The disease which proved so fatal to the latter animals, is known among the farmers by the name of the yellow water. We conceive it to be a modification of the Yellow Fever.

2dly. A second source of our late fever, appears to have been derived from the noxious air emitted from the hold of the Snow Navigation, Capt. Linstroom, which arrived, with a healthy crew, from Marseilles, on the 25th of July, and discharged her cargo at Latimer's wharf, after a passage of eighty days. We are led to ascribe the principal part of the disease which prevailed in the south end of the city, to this noxious air, and that for the following reasons.

1st. The fever appeared first on board this vessel, and in its neighbourhood, affecting a great number of persons nearly at the same time, and so remote from each other, that it could not be propagated by contagion.

2dly. There was in the hold of this vessel, a quantity of vegetable matters, such as prunes, almonds, olives, capers, and several other articles, some of which were in a state of putrefaction.

3dly. A most offensive smell was emitted from this vessel after she had discharged her cargo, which was perceived by persons several hundred feet from the wharf where she was moored.

4thly. A similar fever has been produced from similar causes, in a variety of instances; we shall briefly mention a few of them.

At Tortola, a fever was produced in the month of June, in the year 1787, on board the ship Britannia, Capt. James Welch, from the noxious air generated from a few bushels of potatoes, which destroyed the captain, mate, and most of the crew, in a few days.

Two sailors were affected with a malignant fever, on board the ———, Capt. Thomas Egger, in the month of March, 1797, from the noxious air produced by wine that had putrified in the hold of the ship, one of whom soon died after her arrival in Philadelphia.

In the month of June, 1793, the Yellow Fever was generated by the noxious air of some rotted bags of pepper, on board a French Indiaman, which was carried into the port of Bridgetown, by the British letter-of-marque Pilgrim. All the white men and most of the negroes employed in removing this pepper, perished with the Yellow Fever, and the foul atmosphere affected the town, where it proved fatal to many of the inhabitants.

On board the Busbridge Indiaman, a Yellow Fever was produced in the month of May, 1792, on her passage from England to Madras, which affected above two hundred of the crew. It was

supposed to be derived from infection, but many circumstances concur to make it probable that it was derived from noxious air. The absence of smell in the air does not militate against this opinion, for there are many proofs of the most malignant fevers being brought on by airs which produced no impression on the sense of smelling. This is more frequently the case, when the impure air has passed a considerable distance from its source, and becomes diluted with the purer air of the atmosphere.

Several cases are related by Dr. Lind, in his treatise upon fever and infection, of the Yellow Fever originating at sea, under circumstances which forbade the suspicion of infection, and which can only be ascribed to the impure air generated from putrid vegetables.

So well known, and so generally admitted is this source of Yellow Fever in warm climates, that Dr. Shannon, a late writer upon the means of preventing the diseases of warm climates, in enumerating its various causes, expressly mentions "the putrid effluvia of a ship's hold."

We wish due attention to be paid to these facts, not only because they lead to the certain means of preventing one of the sources of this fever, but because they explain the reasons why sailors are so often its first victims, and why, from this circumstance, the origin of the disease has been so hastily, but erroneously ascribed solely to importation.

The fever which prevailed along the shore of the Delaware, in Kensington, and which proved fatal to Mr. Joseph Bowers and two of his family, we believe, originated from the noxious air emitted from the hold of the ship Huldah, Capt. William Warner. This air was generated by the putrefaction of coffee, which had remained there during her voyage from Philadelphia to Hamburgh and back again.

In the course of our inquiries, we were led to suspect one source of our late fever to be of foreign origin. The sails of the armed ship Hinde, on board of which several persons had died of the Yellow Fever, on her passage from Port-au-Prince, and which arrived on the 4th of August, were sent to the sail-store of Mr. Moyse. Four persons belonging to the loft were soon afterwards affected with symptoms of a bilious Yellow Fever. We shall not decide positively upon the origin of the fever in these cases; but the following facts render it probable that it was not derived from the persons who had died of it on board the suspected vessel. 1st, the sails emitted an offensive smell; 2d, three of the cases of the persons affected in the sail-loft, were of a mild grade of the fever; 3d, the fever was not propagated by contagion from any one of them; 4th, the sail-loft was within the influence of the noxious air which was emitted from the hold of the Snow Naviga-

tion, being not more than fifty yards, and was in the direction of the wind which blew at that time over her. The extent of this air has not been accurately ascertained, but many analogies give us reason to believe that it may be conveyed by the wind, in its deleterious state, from half a mile, to a mile.

In support of the opinion we have delivered of the origin of our late fever, we must add further, that in that part of the city which lies between Walnut and Vine streets, and which appeared to be free from the effects of exhalation and the noxious air of the ships, there were but few cases of the fever which appeared to spread by contagion, even under the most favourable circumstances for that purpose.

Having pointed out the nature and origin of our late fever, we hope we shall be excused in mentioning the means of preventing it in future. These are,

First, A continuance of the present laws for preventing the importation of the disease from the West-Indies, and other parts of the world where it usually prevails.

Secondly, Removing all those matters from our streets, gutters, cellars, gardens, yards, stores, vaults, ponds, &c. which, by putrefaction in warm weather, afford the most frequent remote cause of the disease, in all countries. For this purpose we recommend the appointment of a certain number of physicians, whose business it shall be to inspect all such places in the city, the Northern Liberties, and Southwark, as contain any matters capable, by putrefaction, of producing the disease, and to have them removed.

Thirdly, We earnestly recommend the frequent washing of all impure parts of the city in warm and dry weather, by means of the pumps, until the water of the Schuylkill can be made to wash all the streets of the city; a measure which we conceive promises to our citizens the most durable exemption from bilious fevers of all kinds, of domestic origin.

Fourthly, To guard against the frequent source of Yellow Fever from the noxious air of the holds of ships, we recommend the unlading all ships, with cargoes liable to putrefaction, at a distance from the city, during the months of June, July, August, September and October. To prevent the generation of noxious air in the ships, we conceive every vessel should be obliged, by law, to carry and use a ventilator; and we recommend, in a particular manner, the one lately contrived by Mr. Benjamin Wynkoop.—We believe this invention to be one of the most important and useful that has been made in modern times, and that it is calculated to prevent not only the decay of ships and cargoes, but a very frequent source of pestilential diseases of all kinds in commercial cities.

In thus deciding upon the nature and origin of our late fever,

we expect to administer consolation to our fellow-citizens upon the cause of our late calamity, for, in pointing out its origin to the senses, we are enabled immediately and certainly to prevent it. But while the only source of it is believed to be from abroad, and while its entrance into our city is believed to be in ways so numerous and insidious, as to elude the utmost possible vigilance of health-officers, we are led in despair to consider the disease as removed beyond the prevention of human power or wisdom. It has been by adopting measures similar to those we have delivered for preventing pestilential diseases, that most of the cities in Europe, which are situated in warm latitudes, have become healthy in warm seasons, and amidst the closest commercial intercourse with nations and islands constantly afflicted with those diseases. The extraordinary cleanliness of the Hollanders, was originally imposed upon them by the frequency of pestilential fevers in their cities. This habit of cleanliness has continued to characterize those people after the causes which produced it have probably ceased to be known.

In thus urging a regard to the domestic sources of the Yellow Fever, we are actuated by motives of magnitude far beyond those which determine ordinary questions in science. Though we feel the strongest conviction that the value of property, the increase of commerce, and the general prosperity of our city, will be eminently forwarded by the adoption of the foregoing propositions, yet these are but little objects in our view, when compared with the prevention of the immense mass of distress which never fails to accompany a mortal epidemic. We consider ourselves, moreover, as deciding upon a question which is to affect the lives and happiness, not only of the present inhabitants of Philadelphia, but of millions yet unborn in every part of the globe.

We are, with the greatest respect,

Sir,

Your very humble servants,

BENJAMIN RUSH,
CHARLES CALDWELL,
WILLIAM DEWEES,
JOHN REDMAN COXE,
PHILIP SYNG PHYSICK,
JAMES REYNOLDS,
FRANCIS BOWES SAYRE,
JOHN C. OTTO,
WILLIAM BOYS,
SAMUEL COOPER,
JAMES STUART,
FELIX PASCALIS,
JOSEPH STRONG.

ARTICLE III.

From the American Daily Advertiser.

Messrs. Claypoole,

Be pleased to give the following Letter, from the Governor, to the College of Physicians, with their Answer, a place in your paper, and oblige I.

January 8, 1798.

SIR,

AS I am desirous to lay before the Legislature a statement of the circumstances attending the calamity which has recently visited the city of Philadelphia, permit me, through you, to request the aid of the College of Physicians in satisfying the following inquiry:

What measures ought to be pursued to purify the city from any latent infection? and what precautions are best calculated to guard against the future occurrence of a similar calamity?

I am persuaded the public spirit and benevolence of the College of Physicians, will induce them cheerfully to excuse, and to comply with this request, which is intended to establish a foundation for regulations, that may co-operate with their professional labours in preserving to their fellow-citizens, the invaluable blessings of health.

I am, with great esteem, Sir,
Your most obedient humble servant,
THOMAS MIFFLIN.

Germantown, October 24, 1797.

To Dr. JOHN REDMAN, *President of the College of Physicians.*

SIR,

WE have duly considered your letter of the 24th ult. and shall cheerfully comply with the requisitions contained therein.

The measures to be pursued for purifying the city from any latent infection, are such as we have heretofore recommended, viz. A strict attention to cleanliness, washing, white-washing, and ventilating the infected houses, bedding, and cloathing, and fumigating them with charcoal and sulphur, or a mixture of oil of vitriol and salt-petre. These, with the frost, we believe, will be found sufficient intirely to destroy any latent contagion.

But the latter part of your inquiry, viz. what precautions are best calculated to guard against the future occurrence of a similar

calamity, is an object of such magnitude, as to demand a more particular reply.

We have, on former occasions, communicated our sentiments on this head; but as you now inform us, that it is intended to establish a foundation for future regulations, we willingly enter into the detail, and though this will principally consist of repetition, yet it may be useful to have our ideas presented in one view for your consideration. And as these sentiments have been more fully confirmed by recent events, we are again induced earnestly to recommend a strict adoption of the measures we advised in our communication of August 18th, 1797, as being the best calculated to guard against the future introduction of contagious diseases. We now recapitulate those advices, with some additions.

Let an entire new health-law be made, constituting a Board of Health, to consist of five persons, two of whom to be practitioners of physic. The smallness of the number will ensure responsibility and a constant residence in the city; and the professional knowledge will be necessary to assist in directing the measures of the Board. Let no person whose private interest may be affected by quarantine laws be a member of this Board.

Let a sufficient sum of money per annum be subject to the drafts of the Board, who shall render to the Assembly, a yearly account of their expenditures. Let this Board sit daily during the months of July, August, September, and October; and during these months, let every vessel from the Mediterranean, coast of Africa, West-Indies, and continent of America, to the southward of Florida, perform an effectual quarantine. Let the cargoes of suspicious vessels be unloaded, and, with the vessels, be purified at the island.

Let a resident physician or health-officer be appointed, who shall never be absent from the island, during the above-mentioned months; and a consulting physician, who shall reside at Philadelphia.

Let the punishment of a master of a vessel, who evades the law, by landing cargo, crew, or passengers, contrary to the intent and meaning of it, be the same as for murder of the second degree. Let no vessel of war be allowed to come above the fort.

Let the Board of Health have full power, with the concurrence of the Governor, to cut off the intercourse with infected persons and places. Let the long projected hospital be erected.

Let the most diligent and scrupulous attention be given for cleaning and watering the streets, gutters, and wharves, throughout the city and liberties.

Such are the precautions which we believe best calculated to guard against the future occurrence of calamities similar to those we have experienced. If further discoveries shall happily add to

our knowledge on this important subject, we shall not fail to make such communications to the Governor without delay.

By order of the College of Physicians,
JOHN REDMAN, President.

THOMAS C. JAMES, Secretary.

Philadelphia, November 7, 1797.

To his excellency Thomas Mifflin, Esq. Governor of the Commonwealth of Pennsylvania.

ARTICLE IV.

To the SENATE *and* HOUSE *of* REPRESENTATIVES *of the Commonwealth of Pennsylvania, the Memorial of the* COLLEGE *of* PHYSICIANS *of Philadelphia represents:*

THAT your memoralists, deeply affected with the calamities produced by the disease which has recently occurred amongst us, are impelled, by a sense of duty to their fellow-citizens and themselves, to inform you, that they consider the laws which were enacted for the purpose of preserving this city from malignant contagious disorders, are very imperfect.

The subject being of immense importance, they hope to be excused for stating their sentiments with respect to it at large.

They are of opinion that the disease which produced so much mortality and distress in the year 1793, was imported into this city from the West-Indies; and they are confirmed in this sentiment, by the circumstances attending the disease of this year, which they consider of the same nature and derived from the same source.

Some of their most important reasons for this opinion are as follow:—The disease in question is essentially different from the fevers that occur in this climate, and which originate from domestic causes. This difference particularly regards the general progress of the symptoms, and the mortality, as is evident upon a comparison of its history with that of the ordinary diseases of this city.

A disease which resembles the fever of 1793, and of this year, in many important points, has long been known in the West-Indies, and in those parts of America situated between the tropics; and in seven or eight different instances, in which a similar disease has occurred in the United States, in the course of this century, there is good reason to believe that it was derived from those countries. In most of the instances, the original history of the disease contains the information that it was imported. In some cases, the

infection can be traced to the imported clothing of persons who died in the West-Indies. In most of the cases where the importation cannot be ascertained, the first appearance of the disease has been, as in the other instances, in the neighbourhood of the shipping, or among persons connected with vessels.

The circumstances attending the fever of this year are extremely in point; and the narrative which accompanies this, will, we trust, satisfy you that it was imported. The disease in question commenced invariably in our sea-ports, while inland towns, equally exposed to the ordinary causes of fever, escaped; and in the two last instances of its occurrence in Philadelphia, the suburbs and the country adjacent, were more healthy than usual at the same season; and at the commencement of the disease, all the parts of the city, excepting the small spaces to which it was confined, were remarkably healthy.

It exists in the West-Indies, particularly in time of war, when great numbers of strangers are to be found there; and reference to dates will shew, that in most of the instances of the occurrence of the disease in the United States, there has been war in the West-Indies.

Your memoralists are aware, that cases may be adduced where the disease has occurred in persons who were not known to have been exposed to imported contagion; but such is the subtile nature of this power, that it often exists unsuspected; and similar difficulties occur respecting the small-pox, and other contagions, allowed by all to be of foreign origin. There also occur, although very rarely, solitary cases of malignant remitting fevers, the symptoms of which resemble so much the disease in question, that they are often supposed to be the same; but there is this essential difference, that a malignant remittent fever has never been, to our knowledge, contagious in this climate.

The difference of sentiment among physicians, now so much regretted, resembles that which almost always takes place, when the plague is introduced into any of the civilized parts of Europe, where it is not well known. The identity of the disease, its origin and its contagious nature, have been often the subject of controversy. Some physicians have considered it as of domestic origin; but proper health-laws, strictly enforced, have latterly protected the commercial parts of Europe from its ravages.

With these sentiments of the nature of the disease, your memoralists cannot but regard a proper law respecting the subject, as a matter of the greatest importance; and although they are perfectly sensible of the imperfection of the science of medicine, yet, from a conviction that physicians are the best informed, as well as the most interested in the subject, they approach you with that respect which is due to your legislative authority, and declare their belief,

that the existing health-laws of this commonwealth are not such as are best calculated to obtain the desired end, and that they ought to be improved.

Having lately communicated in writing to the Governor, their ideas respecting the best methods of preventing the introduction of contagious diseases, they beg leave to refer you to that communication. At the same time they tender you their professional assistance in framing an efficient law for this purpose; and thus having performed their duty, they hold themselves discharged from all responsibility, on account of the evils which may arise from the present imperfect state of the legislative arrangements respecting this important subject.

By order of the College,
JOHN REDMAN, President.

Attest. THOMAS C. JAMES, Secretary.

Philadelphia, December 5, 1797.

ARTICLE V.

From the Commercial Advertiser.

To NOAH WEBSTER, *Junior, Esquire.*

DEAR SIR, *New-York, Dec.* 10, 1797.

THE inclosed account of the operation of the manure collected from the streets of our city, in increasing the productiveness of land, was lately put into my hands for the information of the Agricultural Society; and I have been directed to cause it to be made public. The extraordinary crops of Indian corn afforded by it, redound highly to the skill and judgment of the gentlemen who undertook the experiments. The subject is interesting in several respects. To our farmers it must be peculiarly agreeable to learn what a great amount of grain can be raised by proper management on a small piece of land. To our Commissioners of the Health-Office, it must be no less welcome intelligence, that the collected mass of nuisance which they are, with such happy success, engaged in removing from the city, is convertible by the powers of vegetation, from poison to wholesome articles of food. To the citizens at large, and particularly to yourself, who have explored with such minuteness and such extent of research, the connection between these local and domestic sources of pestilential exhalations, and our annual visitations of endemic distempers—there must be high satisfaction in contemplating how the purity and

healthiness of the towns may contribute to the thriftiness and wealth of the surrounding country—And to all of us, it is matter of the utmost moment, to receive additional proofs of the power of the alkaline qualities of the lime, pot-ash and soda, thrown out and scattered about the streets, to neutralize the acid vapours which excite fevers and plagues among us, and convert them into the richest of manures; and thus, by one operation, clearing the atmosphere of its noxious fumes, and preparing nourishment for the vegetable world.

I hope one day to be able to add to these testimonials, the result of my own experiments on these carbonates and septites of lime, pot-ash and soda, in raising crops of barley and wheat; and in the mean time entertain the hope, that further particulars concerning the operation of the *street manure*, in raising Indian corn, will be given us by the gentlemen who have conducted the experiments I send you. I think we are getting on the right track of inquiry about these matters, and shall soon be able, for it is most certainly in our power, to make pestilence submit to municipal and agricultural regulations.

Yours with much esteem,

SAMUEL L. MITCHILL, Secretary.

To the Secretary of the Agricultural Society of New-York.

A FEW days ago I saw republished in the newspapers of this city, an extract from a Jersey paper, giving an account of the great fecundity of the soil in the neighbourhood of Elizabeth-Town—155 bushels of Indian corn in the ears had been produced from an acre of land. This was certainly a great crop—but this falls vastly short of what *may* be gotten off an equal quantity of ground. As an incitement to the spirit of emulation and industry among farmers in the United States, I shall now lay before them a short account of the result of two crops of three acres each, which were planted in the neighbourhood of this city, in consequence of a wager of fifty guineas. In pursuance of the terms of this bet, which were reduced to writing, the ground in which the crop stood, belonging to each party, was accurately measured—and when gathered, each crop was measured by a person sent by the adverse party for the express purpose. From the nature of the case it is evident, that the results of these crops of corn would not fail of being ascertained with the utmost attention to accuracy. One common measure was made by both parties, and upon shelling out the ears contained in this measure, the produce of each crop was as follows:

The produce of the crop raised by Mr. John Stevens, of Hoboeken. Sum total of measures full of corn in the ear, 233½—A measure full contained one bushel and a half and one pint of

shelled corn; 233⅓ give, consequently, 354 bushels and 6 quarts, or 118 bushels and 2 quarts per acre.

The produce of the crop raised by Mr. Daniel Ludlow, of Westchester, is as follows:

Total, 182 measures of corn in the ear. Shelled corn in a full measure, 1 bushel and a half and 4 quarts—which in 182 gives 295 bushels and 12 quarts, or 98 bushels and 14 quarts per acre.

These are truly noble crops, and do honour to the industry and agricultural skill of the cultivators; and as each of the gentlemen have in their mode of culture deviated from the common routine of practical farmers, a short account of the process adopted by each, cannot fail of proving useful and instructive to the members of the Society, and to every American farmer.

I have not had an opportunity of obtaining any minutes from Mr. L. himself respecting his crop; but am informed that he planted his corn in continued rows, at about four feet asunder, and about eight inches from stalk to stalk in the rows; and that he manured his ground with 200 horse-cart-loads of *street dirt*.

Mr. S. informs me, that he gave his ground three plowings before planting, and before the last plowing put on 700 horse-cart-loads of *street manure*—That he planted in double rows at 5½ feet asunder—that he was at the pains of dibbling in each grain. To do which with expedition and accuracy, he bored two rows of holes in a piece of board of about four feet long, so as to form equilateral triangles, the sides of which were seven inches, as thus

. . . . .

. . . . . Into these holes he drove pegs about 3½ inches long. As the corn was dropped into these holes, made with this machine, a man followed with a basket of rotten dung, with which he filled them up. Then came on the carts, out of which the rows were sprinkled with a coat of *street manure*. During the season the crop was suckered three times. The intervals were repeatedly plowed, and the rows kept perfectly clean of weeds, by hoeing and hand-weeding.

But extraordinary as this crop must appear, Mr. Stevens is confident that he should have had considerably more corn, had not his crop suffered very greatly by a thunder-storm, which laid the greater part of it down at the time the ears were setting.

AGRICOLA.

ARTICLE VI.

A Case of Hydrocele, cured by Injection. Communicated to G. PEARSON, *M. D. by Dr.* DAVID HOSACK, *of New-York.*

[*From the Annals of Medicine for* 1796.]

A MAN about forty-five years of age, of a full habit of body, captain of a vessel trading to the East-Indies, sent for me on the 20th of May, 1795, to examine a tumor on the left side of his scrotum. Upon inquiry, he told me he had first discovered it when in the East-Indies, about six years since; from which time it had gradually increased in size, but without any injury to his general health.

Upon a careful examination of the tumor, by the usual tests of hydrocele, it proved to be that disease; the testicle itself, which was easily felt at the back part of the scrotum, appeared also to be much enlarged. Satisfied as to the nature of his disease, he became anxious to have it removed as speedily as possible.

He being an intelligent man, I described to him the different methods which had been employed for the cure of it: He did not hesitate to give the preference to the one which would probably be the least painful; that is, the method of injection, as practised at present by Mr. Earle, surgeon at St. Bartholomew's Hospital, in whose hands I have several times witnessed its success.

Having ordered his bowels to be emptied, as preparatory to the operation, on the morning of the 21st, in presence of Drs. Post, Hamersley, and Tillary, three eminent physicians in this city, I drew away, by means of a trocar, upwards of a pint of water, having the appearance and smell of urine; the testicle proved to be considerably enlarged. I immediately, by the apparatus employed by Mr. Earle, injected a mixture of wine and water, in the usual proportion of two parts of the former to one of the latter, until the scrotum became distended to the size it had acquired before the operation.

The injection at first gave him little or no uneasiness; but upon being retained five minutes, he began to complain of pain: I immediately withdrew the liquor; suspended his scrotum by the assistance of the T bandage; put him to bed, and gave him fifty drops of laudanum.

His pain soon abated, but returned in the evening, with considerable tumor. I repeated his anodyne at bed-time, which gave him a comfortable night's rest. On the 22d, his tumor had increased, but was attended with very little pain: From this time it continued to increase till the 26th, when it became nearly as large

as before the operation, attended with redness and other symptoms of inflammation. On the 26th, I ordered him two ounces of Glauber's salts, in divided doses, and a poultice of bread and water to be applied to his scrotum. On the 27th, the tumor and inflammation began to subside; and, in the course of six days more, entirely disappeared, except that the testicle still remained much larger than its natural size; but in a few days, it also began to diminish.

In three weeks from the operation, he was completely freed from every symptom of hydrocele; the testicle had nearly recovered its natural size: he went about his business, to prepare his vessel for sea: and since that time he has enjoyed good health, without the least symptom of a return of his complaint. I have also since witnessed the same operation successfully performed by Dr. Post.

ARTICLE VII.

Experiments on the Cultivation of the Poppy-plant, and the Method of procuring Opium, &c. By Dr. SHADRACH RICKETSON, *of Dutchess Country, New-York.*

[*From the American Magazine, published in New-York in* 1788.]

OPIUM is the produce of the *papaver somniferum* of Linnæus, which, as a genus, comprehends two species, viz. 1. The double; 2. the single; each of which includes several varieties as to the colour of the flowers, some being white, some red, others purple and variegated.

From history we are told, that in the several provinces of Asia, it is the large white poppy only that is cultivated for the purpose of collecting opium; but, from the trials that I have made, I am of the opinion that it is a matter of indifference which species or variety of the plant is cultivated for medicinal use, as they all afford, when tapped, a juice that is similar as to quantity, colour, and every other respect, both fresh and when dried: however, I have thought that the large double species produces the greatest number of heads, and consequently the greatest quantity of juice from one seed; but of this I have not yet had sufficient trials to be certain.

Among the poppies cultivated with a view to make the present experiments, I had some that had thirty heads apiece, all of which sprung from one seed, and from one original stalk.

The poppy seeds in this country should be sown or planted about the middle of May, in rich moist ground.

The ground should be formed into areas of about four feet in width. The seeds should be planted at about ten or twelve inches distance in transverse rows, which should also be about the same distance from each other.

Shallow holes of an inch depth should be made in the rows at the distance mentioned; the seeds put in, and covered over even with the ground; after which they are suffered to remain till the plants are grown about four inches high, when, especially if the land is dry and not fertile, they may be frequently watered and manured, the best for which last purpose is said to be a compost of dung, ashes, and a nitrous earth.

They are said in the East-Indies to water them again profusely just before the flowers appear; but as I have had them grow very luxuriant and succulent in good ground, without either manuring or watering, I am disposed to think that the advantages arising from this last particular, are not adequate to the trouble of doing it.

It is scarcely necessary to remark, that the plants, from their first coming up, should be kept clean from weeds and the like, which may be done with very little trouble with a small hoe, especially if the seeds are planted after the manner I directed, that is, in rows.

Having said all that is necessary on the cultivation of the plant, I shall now proceed to describe the method of obtaining its juice, which, when inspissated to a pilular consistence, is called opium.

The states of the plants wherein I have found them to yield the most juice, are just before, in the time of, and immediately after flowering: the plants being arrived to one or other of the states above-mentioned.

We then proceed to that part of the process called tapping, which we are told is done in Asia, by making two or three longitudinal incisions in the half grown capsules, without penetrating their cavities, at sunset, and the plants suffered to remain till morning, when the juice is to be scraped off and worked in a proper vessel, in a moderate heat, till it becomes of a pilular consistence: which method, with several others, I have tried, but none have ever succeeded so well with me, as, in a sun-shining day, to cut off the stalks, at about an inch distance from their flowers or capsules, and as soon as the juice appears, which it does at first equally well on the part of the stalk cut off with the capsule or flower as on the standing part, to collect it with a small scoop or penknife, the last of which I have found to answer the purpose very well. After the juice ceases to appear on the top of the standing stalk, it should be cut off about an inch lower, when it will be found to yield almost as freely as before, and repeated as long as any juice appears.

The juice, when collected, should be put into an evaporating pan, placed in the sun's heat, and frequently stirred, till it becomes of a consistence to be formed into pills, or made into rolls for keeping or transportation.

The quantity of opium that may be procured, depends very much upon the largeness of our plants, and the care used in collecting it. From one poppy plant, I have produced seven grains of the inspissated juice.

If any would choose to have the opium freed from its impurities, it may easily be done by pressing the juice before it is evaporated through a linen strainer; but if pains be taken according to the foregoing directions, I believe there will be little or no occasion for it.

Here the following question presents itself, viz.

Does the opium I have been describing possess the same properties as the Asiatic opium?

To determine which I made the following experiments:

Experiment 1. *July* 27, 1787. At six o'clock A. M. I took one grain of this opium; at seven, breakfasted on chocolate; at a quarter after seven, I was called upon to visit a patient; I immediately mounted my horse and rode two miles, and as I rode, I felt unusually cheerful: a tinged fullness and redness of my head and face, as if I had been drinking ardent spirits, seemed also to attend me.

Nine o'clock, while at my patient's house, I felt a slight sickness at my stomach, accompanied with a moist sweat. Ten o'clock, the sickness and sweat continuing to increase, I set off for home, and on the way it just occurred to me, that the opium I had been taking was the cause of my illness, and before I reached home I puked up my breakfast, which gave me a little ease.

After I got home I was seized with vertigo, slight tremors, stupor, attended with a small contracted pulse, when I went to bed; ate no dinner; at about two o'clock P. M. I vomited a considerable quantity of sour watery fluid, after which I felt some easier, and in about an hour afterwards, I had several violent retchings, and raised some bile. Being now fatigued by the vomiting, &c. I took a large dose of the antiemetic mixture, which, after a short sleep, seemed to give me remarkable relief, and after which all the symptoms gradually vanished. I perceived my urine to be high coloured: I had no stool from the day before I took it till the morning of the 29th; and between eleven and twelve o'clock of the same day, I had three or four liquid stools, accompanied with considerable gripings.

I think it proper to remark, that during the above symptoms, I had no uncommon sleepiness.

Experiment 2. Unsatisfied with the preceding experiment, and not knowing whether the symptoms that I laboured under were solely the effect of the opium, *August* 6, at six o'clock A. M. I took a half a grain of the same kind of opium; the effects that I perceived from it were, in the forenoon, a cheerfulness, and in the afternoon a loathing, and a small degree of sickness at spells.

Experiment 3. *August* 20. At seven o'clock in the morning, I took one grain of the above-mentioned opium: Eight o'clock, breakfasted on tea; after breakfast I felt an unconcernedness, my face felt turgid, and I had some slight sickness and inclination to vomit, and about ten o'clock I had several retchings and puked, and half after ten I puked again: In short, I underwent very much the same series of symptoms as in Experiment 1st. indeed, sufficiently so to confirm me that the complaints I laboured under were solely the effects of the opium.

Experiment 4. Half after seven o'clock in the morning, I took a full grain of the Asiatic opium; at half after eight breakfasted on milk. I felt no unusual effects from it till about twelve o'clock, when a flushing and a turgid fulness of my face came on: dined at one o'clock, after which I was attacked with considerable pain in my bowels, loathing and sickness, (but not so much as to puke) which continued to remain till I went to bed. I had no stool that day as usual; no uncommon sleepiness.

Quæritur. Is the vomiting that occurred after taking the opium to be imputed and ascribed to the peculiar effect of it on the stomach, or is it to be considered as an effort of the *vis medicatrix naturæ*?

From what has been said, I think we may induce the following inferences, &c.

1. That the poppy plant is the same here as in Asia, and that the difference depends only on the climate, soil, and mode of cultivation.

2. That every species and variety of the plant, is equally capable of producing opium.

3. That the collecting of it might not only become an useful, but also a lucrative business.

4. And lastly, that the opium collected here, is as strong or stronger than the Asiatic opium: in confirmation of which, I shall beg leave to add the following passage of a letter I am favoured with, from my quondam friend and former master, Dr. Benjamin Anthony, to whom I gave some of the opium of my own procuring for trial, and who had been accustomed to use opium on account of the rheumatism: "Being in pain this morning, I took "a grain of the opium; the operation appears to be the same as

"that (of the other opium) which I have commonly used; a grain "is perhaps equal to two of the common."

Whether the virtues of opium reside in a fixed or volatile principle, is a matter that admits of a dispute: some late experiments seem to favour the latter opinion, which being admitted, one reason I think why the opium collected here is stronger than the Asiatic is, that the latter loses greatly of its strength by the long keeping and transportation which it undergoes.

FOREIGN.

ARTICLE I.

ON THE CULTURE OF OPIUM.

[*From the Annals of Medicine for* 1796.]

AMONG the premiums given by the Society in London for the encouragement of arts, manufactures, and commerce, for the year 1796, is one of fifty guineas to Mr. John Ball, of Williton, for the discovery of his method of preparing English opium, or opium prepared from poppies reared in England. This opium is attested, by several physicians who have made trial of it, and whose letters are inserted, to be at least equal in efficacy, in the same dose, to foreign opium. Mr. Ball, in one of his letters in the correspondence with the Society on this subject, asserts, that he has no doubt that the opium which he prepares from poppies growing in his own garden, may be afforded at half the price of the foreign opium: for that, in a few years, we shall be able to render it from five to eight shillings per pound, without the least adulteration. And I am of opinion, says he, that the more barren ground, which in some places lets at from two to ten shillings an acre, will, with very little expence, answer for the growth of poppies. I shall take care, this summer, to find out whether any particular sort or colour produces the most opium.

We shall give the letter entire, which contains the method of preparing the English opium.

MY LORDS AND GENTLEMEN,

BY your secretary, Mr. More, I received your resolutions respecting your purchasing from me the mode of my preparing the sample of opium, which I took the liberty of sending to you, and at the same time to beg the favour of your having a sufficient trial of its properties, which I find you have been so obliging as to have done, and likewise to have granted me the fifty guineas,

as purchase of my method of preparing opium, for which you have my sincere thanks. I am exceedingly pleased to find, that it was thought worthy of the notice of so honourable and respectable a society; and I am satisfied there can be no other mode of preparing or collecting the pure and genuine opium, than what follows.

Nothing can be more simple, or attended with less expence, than the making or extracting the pure and genuine opium from the large poppies, commonly called or known by the name of Garden-poppies, the seeds of which I would advise to be sown the latter end of February, and again about the second week of March, in beds three feet and a half wide, well prepared with good rotten dung, and often turned and ploughed, in order to mix it well, and have it fine, either in small drills, three in each bed, in the manner sallads are sown, and when about two inches high, to thin them one foot apart; or otherwise to rear them in beds in the broad-cast way, and thin them to the same distance; and if the weather should prove wet at that time, those that are taken up may be transplanted; but I do not suppose that the transplanted ones will answer, as they have but one root, and require frequent waterings. Keep them free from weeds, they will grow well, and produce from four to ten heads, shewing large and different coloured flowers, which, when the leaves die away and drop off, the pods then being in a green state, is the proper time for extracting the opium, by making four small longitudinal incisions with a sharp-pointed knife, about one inch long, on one side only of the seed-pod, just through the scarf-skin, taking care not to cut to the seeds. Immediately on the incision being made, a milky fluid will issue out, which is the opium, and, being of a glutinous nature or substance, it will adhere to the bottom of the incision; but some are so luxuriant, that it will drop from the pod on the leaves underneath. The next day, if the weather should be fine, and a good deal of sunshine, the opium will be found a greyish substance, and some almost turning black. It is then to be scraped off the pods, and, if any, from the leaves, with the edge of a knife, or an instrument for the purpose, into pans or pots; and in a day or two it will be of a proper consistence to make into a mass, and to be potted.

As soon as you have taken away all the opium from one side of the pod, then make incisions on the opposite side, and proceed in the same manner. The reason of my not making the incisions all around at the first, is, that you cannot so conveniently take away the opium; but every person, upon trial, will be the best judge.

Children may with ease be soon taught to make the incisions, and to take off the opium; so that the expence will be found exceedingly trifling. The small white seeds, in that state, will be

found very sweet and pleasant, and may be eaten without the least danger; and it is the custom in the east, to carry a plate of them to the table, after dinner, with other fruits.

I intend, this year, to keep apart a small quantity of opium from each coloured poppy, to find out if any one, more than another, produces a greater quantity, or of greater strength, and shall save seeds of each, to sow separately the next spring. I am of opinion, that numbers of inclosures, taken from hills, in a south aspect, with a very little expence, may be brought into a proper state for the growth of poppies.

I should think, that an instrument may be made, of a concave form, with four or five pointed lancets, about the twelfth or fourteenth part of an inch, to make the incisions at once, and likewise something of the rake kind, so that the three drills, which I have directed to be made in each bed, may be performed at the same time.

By a calculation which I have made, supposing one poppy growing in one square foot of earth, and producing one grain of opium, more than fifty pounds will be collected from one statute-acre of land; but upon recollecting, that one poppy produces from three or four to ten heads, and in each head from six to ten incisions are made, and I am positive, from many of them, (I mean one incision), the last year I took away two or three grains; what must then be the produce? Opium is now twenty-two shillings the pound.

I am, &c.

(Signed) JOHN BALL.

Williton, 2d June, 1795.

In a subsequent letter, Mr. Ball states, that the experiment of transplanting did not succeed, not one plant coming to perfection. The pods should be about the size of a walnut before the incision is made. The dried heads from London, being three times as big, must afford much more opium.

In another subsequent letter, Mr. Ball acquaints the Society, that double or semi-double poppies gave more than twice of what is collected from the single. One poppy, which had twenty-eight heads, afforded above thirty grains of opium. It was of the semi-double kind, and the opium was of a better quality than from single heads. The article closes with three letters of testimonies, namely, from Dr. Latham, Dr. Pearson, and Mr. G. Wilson, of Covent-Garden, who all agree, that the English is at least equal in its efficacy to the best foreign opium.

ARTICLE II.

Analysis of a Memoir of Citizen BONHOMME, *on the Nature and Treatment of Rachitis, or the Rickets.**

[*From Mr. Nicholson's Journal of Nat. Philos. Chem. and the Arts.*]

SINCE the object of the Society of Medicine, in the offer of its prizes, is to bring our knowledge of the healing art to the greatest degree of precision and accuracy of which it is susceptible, this company must necessarily direct its attention to the progress of the chemical analysis of animal matters, and the information which sooner or later it must afford respecting the nature and treatment of many disorders.

Those disorders which alter the composition of the fluids and the consistence of the solids, are assuredly the first which ought to be determined by chemical research. The rachitis is of this number. The change which the bones undergo in this disorder, has long been attributed to the action of an acid on their substance; but this opinion was grounded on mere supposition and remote analogy. The subject is treated in a new manner in the memoir, of which the Society has directed us to present the results; and the experiments, as well as the observations upon which the author grounds his inferences, present to our view matters of fact sufficiently remarkable to afford a presumption that new experiments will confirm their truth. We announce them on the present occasion with expressions of doubt, because these are the expressions which the wisdom and modesty of the author have suggested, and because we think with him, that facts of this nature cannot be stated as if fully proved, but in consequence of multiplied experiments.

The principal notions which constitute the basis of this memoir are the following:

1. According to the author, the nature of the rachitic disorder arises on the one hand from the developement of an acid approaching, in its properties, to the vegetable acids, particularly the oxalic; and on the other from the defect of phosphoric acid, of which the combination with the animal calcareous earth forms the natural basis of the bones, and gives them their solidity.

Whence it follows, that the indication resulting from this proposition, if once adopted, would be, that the treatment of rachitis must depend on two principal points, namely, to prevent the de-

* This memoir was read to the National Society of Medicine at Paris. The analysis was made by Hallé, and is inserted in the seventeenth volume of the Annales de Chimie, whence this translation is made.

velopement of the oxalic acid, and to re-establish the combination of the phosphoric acid with the basis of the bones to which they owe their solidity.

2. The author proves, by experiments and observations, in the first place, that alkaline lotions of the parts affected with rachitis contribute to their cure; next, that the calcareous phosphate taken internally is really transmitted by the lymphatic passages, and contributes to ossification; and lastly, that the internal use of calcareous phosphate, whether alone or combined with the phosphate of soda, powerfully contributes to restore the natural proportions in the substance of the bones, and accelerate the cure of rachitis.

On the present occasion we shall only collect the proof of these fundamental facts, which form the absolutely new part of this memoir, in which the author has besides inserted an excellent abridgement of all that had been ascertained before him on the nature of the bones, the rachitis, and the treatment of this disorder.

With regard to the first parts, the author endeavours to establish these two propositions: 1. That the calcareous phosphate is wanting in the bones of those who are disordered with rachitis. 2. That the developement of oxalic acid is the cause of this alteration.

We must not conceal, that this ingenious part of his memoir contains rather views than absolute proofs of the nature of the rachitic acid. The author himself declares, that he was not provided with the necessary means to establish an exact and complete analysis. He therefore presents his ideas in this respect, merely as conjectures approaching to the truth.

The effect of the action of acids upon bones, was before known; that is to say, that when deprived of calcareous phosphate, and reduced to the gelatinous parenchyma which forms one of their elements, they lose their consistence and become flexible. Hence it was already conjectured by various physicians, that the rachitis was the effect of a peculiar acid.

A disposition to acescence in the first passages is observable in all infants. The odour which characterizes this acescence is often manifest in their breath, and even their perspiration. The bile corrects this disposition; but in general the bile is wanting in rachitic infants. It does not colour their excrements, and the acids accordingly are developed in a very decided manner. They disturb the circulation, and attack and soften the bones. As it is by defect of animalization that these acids develope themselves, it follows that their character is analogous to the fermentescible vegetable acids, and more or less to the oxalic acid; and that, on the contrary, the animal acid or phosphoric acid ceases to be formed, and to unite with the animal calcareous earth; whence they are

deprived of the principle of their solidity. This is the theory of Citizen Bonhomme.

In order to establish this doctrine upon precise experiments, it was requisite to analise rachitic bones comparatively with those of healthy individuals of the same age; and as it is known that the urine of rachitic subjects deposits a great quantity of a substance of sparing solubility and earthy appearance, it would have been advantageous to have joined a complete analysis of this urine and its sediment.

Citizen Bonhomme not being provided with the means sufficient to make these analyses, and being besides of opinion that such rachitic bones as are destroyed by this malady exist in a progressive state of change, which might render their analysis scarcely susceptible of comparison, limited himself to a collection of some of the most remarkable phenomena of the urine of the aged, the adult, and infants in the healthy state, of infants in the rachitic state, and of patients after the perfect cure of this disorder. From these observations he has deduced several important results.

It is known that when the urine contains disengaged phosphoric acid, as happens to aged individuals, and in some peculiar circumstances of the system, if lime water be poured in, there is a speedy deposition of calcareous phosphate. It is also known, that when a solution of the nitrate of mercury is poured to the fresh urine of adults, a rose-coloured precipitate is formed, which is a phosphate of mercury produced by the decomposition of the phosphates contained in the urine. These two proofs are therefore extremely proper to ascertain the presence of phosphoric acid, whether free or combined, in a fluid which in its natural state contains a remarkable proportion. Besides this principle, the urine deposits more or less of sediment, either gelatinous or of an earthy appearance; and lastly, by evaporation, a saponaceous and saline extract, in greater or less abundance, is obtained by evaporation. By means of these four methods of examination, the author has ascertained the following facts:

1. In the healthy state, the sediment naturally deposited by urine is almost totally gelatinous in the infant and the adult, and in the aged individual it is surcharged with an abundant sediment of an earthy appearance similar to the earth of bones, which consequently is calcareous phosphate.

2. The quantity of brown saponaceous saline extract afforded by evaporation is greater in proportion to the age.

3. The presence of disengaged phosphoric acid, as shewn by lime water, is none in the urine of infants, scarcely perceptible in that of adults, but very remarkable in that of old men. For two ounces of this last urine afforded by this means ten grains of phosphate of lime.

4. The decomposition of the phosphates by nitrate of mercury is not seen in the urine of infants; an abundant precipitate of a light rose-colour is produced in this way, from the urine of adults; and in that of old men, this precipitate is always of a grey colour, and very abundant.

Hence Citizen Bonhomme concludes, that the phosphoric acid, whether at liberty or combined, does exist in the urine of healthy individuals in proportion to the destruction of the solids by age, and that it increases with the age.

With regard to the urine of rachitic subjects, the most remarkable facts are, 1. The abundant and apparently earthy sediment it deposits (spontaneously) is different from that of old men, by its colour, which is grey and does not resemble phosphate of lime, and also by its much greater quantity. For a pound of this urine let fall two gros,* whereas the same quantity of the urine of old men deposited only 45 grains.

2. The extract left by evaporation is likewise much more considerable than in other urine. It is one third more in quantity than the extract afforded even by the urine of aged persons.

From these two first observations it follows, that the solids in rachitic subjects are destroyed with much more rapidity than even in old men; and that they afford a much more abundant portion of waste to the urine.

3. The light deposition occasioned by lime water in the urine of rachitic subjects is very small in quantity, brown, gelatinous when fresh, and pulverulent when dry. It does not at all resemble calcareous phosphate.

4. The deposition formed by the solution of mercurial nitrate is not abundant, neither of a rose-colour, as in the urine of adults, nor grey like that of men. It is always white, and consequently has no external resemblance to the phosphate of mercury. The author affirms that it resembles a mercurial oxalate.

Lastly, the urine of the same rachitic subjects, when cured, exhibits again all the characters observed in the urine of healthy children.

We shall not add to the reflections of the author. In effect, though these first observations are curious, they are incomplete. We offer them to physicians simply as the elements of an investigation which it is of importance to continue and bring to perfection. We shall therefore proceed to the curative and experimental parts of the memoir.

We must remark, however, in this place, that the author presents in his work a judicious and methodical exposition of the whole treatment of the rachitis by other physicians; that he esti-

* About two drachms.

mates the value of each remedy, and every part of the treatment, from the circumstances to which they are applicable, the degrees of the malady in which they are to be admitted, and the indications they answer. Setting aside, therefore, every thing which is not peculiarly his own, we shall in this place attend only to that which relates to the use and effects of calcareous phosphate and alkaline lotions.

One of the facts which it was of the utmost importance to establish, was the transition of the calcareous phosphate from the intestinal passages, into those of circulation and secretion. Fourcroy had already well ascertained that the serum of milk contains this salt naturally. Vauquelin had proved its existence, as well as that of pure soda, in the seminal fluid; but was it possible that it could pass unaltered from the stomach and intestines into the vessels which contain the blood and lymph? Could it by this means apply itself to the bones? This was to be ascertained by experiments.

The following are the experiments by which Citizen Bonhomme appears to have succeeded in proving this truth. I shall transcribe his own words.

"I caused several young fowls of the same incubation to be fed "in different manners. Some received the usual food without "any mixture; others received daily a certain quantity of calcare- "ous phosphate mixed, in the same paste as formed the sup- "port of the others; and lastly, one of them was fed with varia- "tions in the use of the mixture: the calcareous phosphate was "sometimes given and sometimes suspended. When these fowls, "after two months, had acquired their ordinary growth, I examin- "ed and carefully compared the state of their bones. The pro- "gress of the ossification in the epiphyses was various, according "to the nature of the food the animal had received. The bones "of the last fowl, which had received the phosphate only from "time to time, were rather more advanced than the bones of those "which had been fed without mixture. The bones of those fowls "which had been habitually fed with the mixture were evidently "more solid, and their epiphyses were much less perceptible. "Simple inspection was sufficient to shew these differences when "the bones were mixed together.

"I had fed several young fowls of the same incubation accord- "ing to another plan. Some were fed on a simple paste, without "mixture; for others it was mixed with pulverised madder-root; "and a third composition was made of this last paste and calca- "reous phosphate. This was also given habitually to other fowls. "When, after two months, I examined the progress of ossification "in the bones of these different animals, I easily perceived the red "traces of the madder in the ossified parts of all those which had

" used it; but I observed that the ossification was not more ad-
" vanced by the simple mixture of this root than by the ordinary
" food; on the contrary, the bones of those fowls which had swal-
" lowed the phosphate mixed with madder were much more solid
" than the others. The red colour served admirably to distinguish
" the extremities of the long bones from their epiphyses. After
" an exact comparison, there could be no doubt of the efficacy
" of calcareous phosphate in favour of the progress of ossification.
" The virtue of the madder seemed confined to that of giving
" colour to the ossified parts."

From these experiments, it was natural to make trial of calcareous phosphate in addition to the remedies made use of in the treatment of rachitic subjects. Here follows what the author himself says, after having spoken of the exaggerated praises given by Haen to the use of oyster-shells (ostracodermata) in the treatment of rachitis.

" Without pretending," says he, " to a result so brilliant as that
" announced by Haen, I can affirm that the calcareous phosphate
" has succeeded very well in the greatest number of rachitic sub-
" jects to whom I have given it. I shall not multiply my ac-
" counts of successful cases in this place, but shall relate only two
" remarkable instances.

" The daughter of Mr. Ranchon, watch-maker, aged two years
" and a half, walked with a feeble and tottering pace, and the ex-
" tremities of all her bones presented epiphyses very prominent.
" In this situation she exhibited the appearance of imperfect rachi-
" tis, or the first period of this disorder. Alkaline lotions, which
" I immediately advised, were attended with a good effect. Her
" sleep became more firm; and as the first passages were in a good
" state, I gave, without internal preparation, one scruple of a mix-
" ture of equal parts of phosphate of lime and phosphate of soda
" twice a-day. In the course of three weeks her legs were per-
" fectly restored; and this amiable infant has ever since had the
" satisfaction to run with spirit and agility.

" A female infant, of the name of Boiard, aged four years, had
" experienced from her birth the most decided symptoms of rachi-
" tis. The protuberance of the epiphyses and tumefaction of the
" abdomen first indicated the disease. The impossibility of sup-
" porting herself and walking at the usual age confirmed these
" unfortunate symptoms. By degrees the glands of the neck and
" of the mesentery became swelled; the teeth were blackened, be-
" came carious, and were not replaced. This situation became
" still more afflicting by crises almost periodical at an interval of
" three or four weeks. At these afflicting periods, a fever of con-
" siderable strength, cardialgia, and even convulsions, particularly
" in the night, were observed. The termination of each paroxysm

" was announced or ascertained by abundant stools, and the eva-
" cuation of urine strongly charged with an earthy sediment.
" The imprudent exhibition of a purge at the beginning of one
" of these crises had nearly deprived the patient of her life. In
" this state it was that I beheld her for the first time in the month
" of January, 1791. The alkaline lotion was the only remedy
" the mother adopted in the first instance, and it produced a re-
" markable effect. After eight days the infant was so much better
" as to be able to support herself. The remedy was then laid
" aside, and eight days afterwards the child was incapable of stand-
" ing without support. The use of the alkaline solution being
" renewed, was attended with the same success, and its discon-
" tinuance was again followed by the complete return of all the
" symptoms. In the first days of March, the other remedies I had
" advised were exhibited. The constipation which had always
" existed became less, and the following crisis was effected without
" pain. And at length the convulsions, the pains, and the crises
" disappeared; but the impossibility of walking still remained. At
" this time, namely, on the second of May, I gave the child the
" phosphate of soda and calcareous phosphate mixed together, in
" the dose of half a dram twice a-day. At the end of the month
" she was able to stand upright, leaning against a chair, and the
" swellings began to diminish. She continued for a long time
" afterwards to take the mixture of the phosphates. I likewise
" gave her occasionally one grain of the extract of bile, prepared
" with spirit of wine; and at length, in the month of July, I had
" the pleasure to see the patient run and play in the middle of the
" street with the other children of her own age, &c.

" J. B. Magné, aged two years and a half, appeared strong
" and well formed. A general rachitis manifested itself rapidly
" in his constitution, without apparent cause. He soon became
" incapable of walking, and his relations learned from his play-
" fellows that he had frequently evacuated white and thick urine.
" Most of the remedies and methods proposed by different authors
" were made use of. At length, discouraged at so many useless
" trials, the parents gave up every remedy, and the child remained
" incapable of walking. The bones of the legs were softened and
" bent. At the age of four years and a half, young Magné had
" the small-pox; the disorder was acute, but terminated happily
" without any particular attention. When the desquamation was
" complete, the child was no longer capable of supporting himself.
" At this period he was brought hither, and I was consulted. I
" observed that part of the bones were so much softened as to
" occasion variations and even violent pain in his walk. I ad-
" vised a purgative, with alkaline lotions and the use of calca-
" reous phosphate, and a proper regimen. Eight days afterwards,

"the whole surface of the skin was covered with an infinity of "small blisters, resembling the itch. My prescriptions were regu- "larly continued, and in one month the solidity of the bones was "entirely secured. For more than a year he has experienced no "relapse. In this case we may remark the inutility of the usual "remedies, the advantage of cutaneous eruptions, and the efficacy "of the treatment I propose."

The incurvated spine, (though apparently confined to the vertebræ, which bones are not only affected with preternatural enlargement, but frequently also with caries) is this disorder, I say, to be regarded as analogous to rachitis, or at least to accidental rachitis? Both have been produced by the repercussion of cutaneous eruptions. Citizen Bonhomme relates observations in which the two affections are so combined that they appear to form one single disorder, varied only according to the parts affected. Is the use of calcareous phosphate applicable to the treatment of the vertebral disease, to complete and accelerate the frequently partial process of other remedies? The author thinks that the following observation is conclusive in this respect:

"At the end of the month of February, 1790," says this physician, "a rachitic child, aged eight years (J. Esprit Guinde), "was presented to me in the General Hospital of this town. He "had been for several weeks among the patients under the care of "the surgeon. At the first moment a prominence of the first "dorsal vertebræ was observed, with a considerable weakness of "the legs. A large blistering plaister had been applied over the "commencing gibbosity, and the blister was kept open by powder "of cantharides for more than a month. The situation of the "infant was not amended. I remarked in this patient all the cha- "racters of the disease described by Pott. I concluded that the "blister had produced as great a discharge as was necessary, and "that it was more essential to oppose the progress of the rachitic "habit. I ordered the whole of the spine to be carefully washed "three times a-day with an alkaline and aromatic lixivium. The "phosphate of soda was mixed with twice as much powder of "burnt hartshorn. Of this I gave to the child one scruple twice "a-day, in a spoonful of soup. After the first week he was able "to walk with assistance; by degrees the solidity of his legs was "re-established, and the spine appeared to recover itself. And at "length, on the 31st of December, when I quitted the service of "that hospital, the boy thought himself sufficiently recovered to "return to his friends.

"Eight or nine months afterwards, I found this unfortunate "child in another hospital appropriated to the reception of scro- "phulous patients. From his answers to the questions I proposed, "I found that the treatment of the month of December had not

" been continued long enough to destroy the principle of the ra-
" chitis; that the disorder had been, as it were, subdued during
" six months, but that coarse food had developed it again. And
" lastly, that the swelling of certain glands, and a diminution of
" the solidity of several ribs and of the humerus of the right side,
" were the effects of its renewed activity. I ordered purgatives
" to be repeated every eight days, the alkaline lotion, and the mix-
" ture of the phosphate of lime and soda; in addition to which I
" prescribed the use of the saponaceous and mercurial pills. The
" efficacy of these remedies was very sensible. The advances of
" the rachitic disorder were stopped; the evacuations were kept
" up; *the distortion of the ribs and of the humerus disappeared;* but
" the original gibbosity remained. This deformity, which could
" not be effaced, did not diminish the pleasure I had to see this child
" perfectly cured after three months treatment."

In most of these observations mention is made of alkaline lotions and their beneficial effects. The following is the author's own account:

" In ordinary cases of rachitis, particularly at the commence-
" ment of the disorder, it is of advantage to use a simple solution
" of pot-ash to wash the parts affected. This solution is made by
" dissolving from half an ounce to an ounce of purified pot-ash*
" in a pound of distilled or very pure spring water. When it is
" to be used, the skin must first be rubbed with a dry cloth, or a
" piece of fine flannel. After this precaution, the diseased extre-
" mities are to be washed carefully with the warm solution, and at
" length wiped, so as to leave no trace of moisture. This prac-
" tice and washing must be repeated at least twice a-day. I can
" affirm, from repeated trials, that it will soon be attended with
" success.

" The solution of pot-ash is not very costly; nevertheless, the
" habitual and long continued use of this remedy for a rachitic
" patient in the second period, becomes expensive to poor parents.
" The lixivium of wood-ashes, which has been used for washing
" fine linen, in which aromatic plants may be infused, becomes
" of remarkable utility for the rachitic children of the poor. I

* M. Hallé, in a note on this paſſage, obſerves, that pure pot-aſh, or the vegetable alkali, is a moſt powerful cauſtic, and cannot be uſed in theſe proportions. He found a ſolution of only one-eighth part of the ſalt here indicated was too ſtrong a lotion for the ſkin of an infant which was very irritable. Citizen Bonhomme, upon inquiry made, acquainted him that the pot-aſh he uſed was that of the ſhops, which is very far from being in a cauſtic ſtate. Probably it may be the ſame as the common ſalt of tartar of moſt of our ſhops in London, which is nothing but pot-aſh or pearl-aſh diſſolved in water, then filtered, and the water driven off by evaporation. It accordingly retains all its ſaline impurities. N.

"have seen the most decided success result from its use. Several "children, who, after having walked alone, found a difficulty in "supporting themselves, were washed two or three times a-day "with this lixivium, and in the space of one or two weeks they "walked with ease and agility, &c.

"I have seen various instances of children cured of their dis- "position to rachitis merely by washing with alkaline liquids; but "in most cases I have thought it necessary to secure the first suc- "cess by other remedies. When the rachitis has already made "some progress, it is evident that all the remedies must be united, "and steadily continued. The alkaline lotion is a remedy the "more preferable, as it is not at all disgusting, and scarcely in any "respect troublesome to children; but the internal remedies pos- "sess superior efficacy."

If the facts here announced should be confirmed by further experience, might we not hope to obtain similar advantage in such other diseases as attack the substance of the bones, and probably have more analogy to the rachitis than has been imagined? Such are the *spina ventosa*, scrophulous tumors and caries, the difficulties in the formation of the bony process, after fractures, slowness and irregularities of dentition, &c. These questions, highly deserving of investigation, are produced by the author of this memoir as consequences of what he has related. He likewise communicates some useful notions respecting the cases in which the other combinations of phosphoric acid may be employed, such as the phosphates of iron and of mercury, concerning which experience has yet afforded him no information.

With the same candour and diffidence as is displayed by the author of this memoir, we present his experiments as essays worthy of the attention of enlightened physicians. We have no doubt but the author will direct his attention in future to extend his proofs and increase the degree of precision and evidence. And even if others should go beyond him in this important inquiry, he will nevertheless enjoy the honour of having begun it.

Let us conclude this abstract by a few reflections. It seems to us, that a multitude of ideas must present themselves to him who shall meditate on the facts here displayed. Without dwelling on those which are still too hypothetical, the single fact of the transition of calcareous phosphate through the passages of circulation, and consequently its solution in the fluids, and its application to the substance of the bones, deserves the highest attention. The means which nature employs to render the calcareous phosphate soluble are well entitled to the researches of chemists: without doubt its combination with soda may have some part in this effect; but it is not less important, in this place, as a remarkable phenomenon in the animal economy, which is essentially connected with

nutrition, and the developement of our organs. If we compare the experiments of Vauquelin on the seminal fluid, with those of Fourcroy on the serosity of milk, and more especially a remarkable fact communicated to us by this last chemist, namely, that the nearer the milk of the human female approaches to the period of parturition, the more the serosity is charged with calcareous phosphate; and the more remote, on the contrary, the time is, from that moment, the less is the proportion of that substance, while the other nutritive parts of which it is composed are augmented in an inverse ratio;—if we consider that at the epocha of gestation and parturition a diminution of solidity takes place in all the articulations of the mother, and a relaxation of the cartilages; that fractures of the bones at this time are most particularly slow in uniting by the formation of the callosity; that it is at this very time of change in the osseous system that the milk becomes charged with calcareous phosphate, which it loses in proportion as the infant and the mother become more removed from the time of the birth; so that the fluids which contribute most to the formation, the growth, and the nutrition of the fœtus, contain in themselves the essential principle of solidity, the elements of ossification; and lastly, that it is not till this ossification is very distinct, and the digestive organs of the infant are sufficiently strengthened to answer the purposes and the work of animalization, that the basis disappears from the milk of the mother;—we shall be compelled to acknowledge a particular direction of nature, by which the calcareous phosphate becomes the matter of a peculiar secretion, essentially ordained to give firmness to our organs, and to consolidate the first elements of man.

May these reflections impart to medical men a conviction how truly important the physical sciences may become to their researches, though too often regarded as merely accessary to medical science! May they see the advantage and necessity of studying the progress of nature in these respects! For it is by these sciences, and more especially by the improvements of animal analysis, which are rapidly advancing, that we may probably expect, in a short time, to diminish the uncertainty of a large number of our methods of practice, and, to speak freely, the too frequent ambiguity of our conjectures.

ARTICLE III.

Cases of the Anti-syphilitic Efficacy of the Nitric Acid, by Mr. HAMMICK.

[*From Dr. Beddoes' Reports, &c.**]

CASE I.

GEORGE HALL, a Marine, thirty-nine years of age, was received into the Royal Hospital at Plymouth, on the seventeenth day of April, 1797, for a venereal complaint, which he had contracted about three weeks before; at this time he had a large, irregular, foul chancre on the lower part of the penis near the scrotum, with an enlargement in the right groin; had never taken any medicine, or applied any thing to the chancre itself: the next day, the 18th of April, he was ordered the following drink:

℞
Acidi nitrosi diluti drachmas ij.
Succi limonis unciam i.
Aquæ fontanæ libras ii.
M. bibat quotidie.

The ulcer was dressed with the simple white ointment: he continued his drink daily to the third of May, when the diluted nitric acid was changed for the same quantity undiluted, which he took, with the addition of syrup, till the eleventh day of May; when his chancre was healed, the enlargement in his groin could not be felt, and in every respect he became well: he was discharged to quarters on that day to go on duty.

N. B. This man never took a grain of mercury.

CASE II.

THOMAS HOMEWOOD, Seaman, twenty-six years of age, was received into this Hospital on the twenty-ninth day of March, 1797, for a venereal complaint, which he had contracted about a month before. He had taken different medicines without effect, for it, on board; the appearance of the disease was a very large

* See Medical Repository, p. 260.

and deep chancre, extending all the length of the penis on the back part; a large and extremely inflamed bubo in each groin, with a profuse discharge of matter from the urethra, accompanied with great heat in passing his urine. His buboes were ordered to be fomented and poulticed twice a day, and two drachms of the strong mercurial ointment to be well rubbed in on the thighs at night; which applications were continued to the 2d of April, when his buboes (now ready to suppurate) were touched with the lapis infernalis, and the eschars were thrown off on the 5th. The next night he used the friction again, and continued it to the 10th, when I found him very weak and low, with a violent cough and much expectoration of thick phlegm streaked with blood, profuse sweats, and such extreme debility, as not to be able to raise himself from his pillow, attended with diarrhœa. The chancre and buboes continuing at the same time very foul, the friction was discontinued, and he was the next day ordered the following drink:

℞
Acidi nitrosi drachmas ij.
Syrupi simplicis uncias viii.
Aquæ fontanæ libras ij.
M. Capiat quotidie.

The day after, finding himself somewhat better, the drink was continued, and from the above alarming symptoms yielding, and an entire alteration taking place both in his health and appearance of the ulcers, he took it to the 10th of May, when he complained the drink vomited him. The nitric acid was then reduced to one drachm daily, which he drank without any uneasy sensation in his stomach, and continued it in that proportion to the 30th of May; when his buboes and chancre being healed, and all his venereal complaints entirely gone, the drink was no longer used, and he was discharged from the Royal Hospital on the 5th day of June, in order to join his ship.

CASE III.

WILLIAM FRANKLIN, Seaman, thirty-six years of age, was received into this Hospital on the 28th day of May, 1797, for a venereal complaint, which he said had made its appearance two months before; for which he had taken a good deal of mercurial medicines on board, without the least effect; in fact, he was

now, he said, worse than at any former period. On examining him, I found a bubo which had suppurated some time, and appeared to be in a spreading state; chancres on the penis; excoriations and ulcers extended to the scrotum and round the anus, which gave him such intense pain, as to oblige him to keep his bed, only getting out once a day in order to have it made. He was ordered the following drink:

℞
Acidi nitrosi drachm. i ss.
Syrupi simplicis uncias viii.
Decocti lignorum libras ij.
M. bibat quotidie.

The excoriated parts were kept clean. He took this drink to the twenty-second day of June, when his bubo, chancres, and excoriations being healed, and finding himself in all respects well, he was discharged that day from the Royal Hospital in order to join his ship.

CASE IV.

JOHN WILLIAMS, a Marine, twenty-four years of age, was received into this Hospital, on the 1st day of May, 1797, for a venereal complaint, which he had contracted ten days before. He had now enlargements of the glands in each groin, and a chancre on the prepuce; had never taken any medicine, or made any application to it; the swelling in his right groin was the size of an egg, and the other in his left, somewhat smaller. He was ordered that day the following drink:

℞
Acidi nitrosi drachmas ij.
Syrupi simplicis uncias viii.
Aquæ fontanæ libras ij.
M. Bibat quotidie.

He was strictly forbidden to apply any thing to the groins: he took the nitric drink that day, and continued it in the same proportion daily to the 8th day of June, when the indurations were entirely dispersed (not even the smallest hardness to be felt) and the chancre healed. He was discharged that day, viz. the 8th day of June, to go to quarters.

N. B. This man had not taken any mercury.